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WOOD

31 PAGES OF PROJECTS

THE MAGAZINE FOR HOME WOODWORKERS

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DECEMBER 1986 • ISSUE NO. 14
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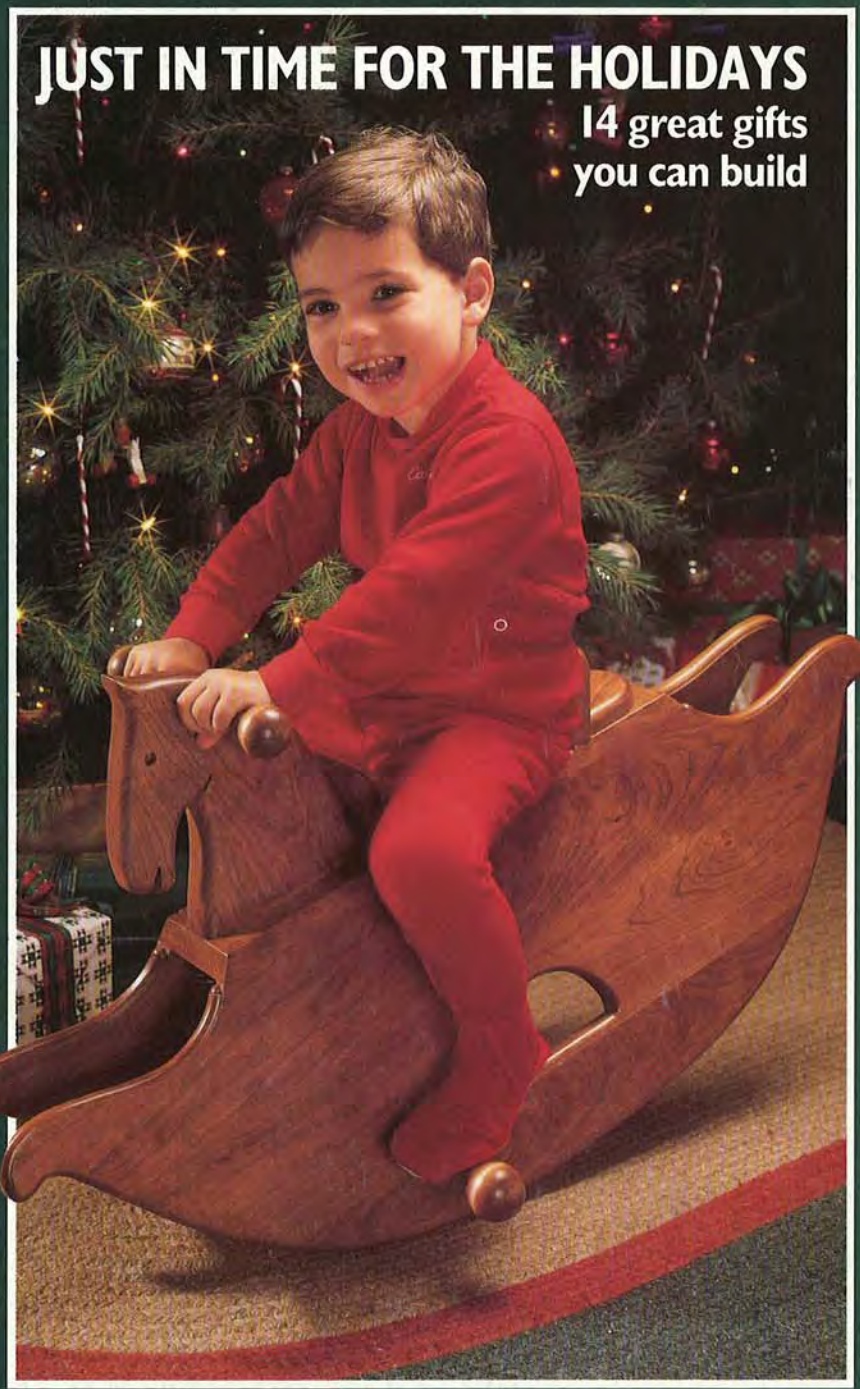

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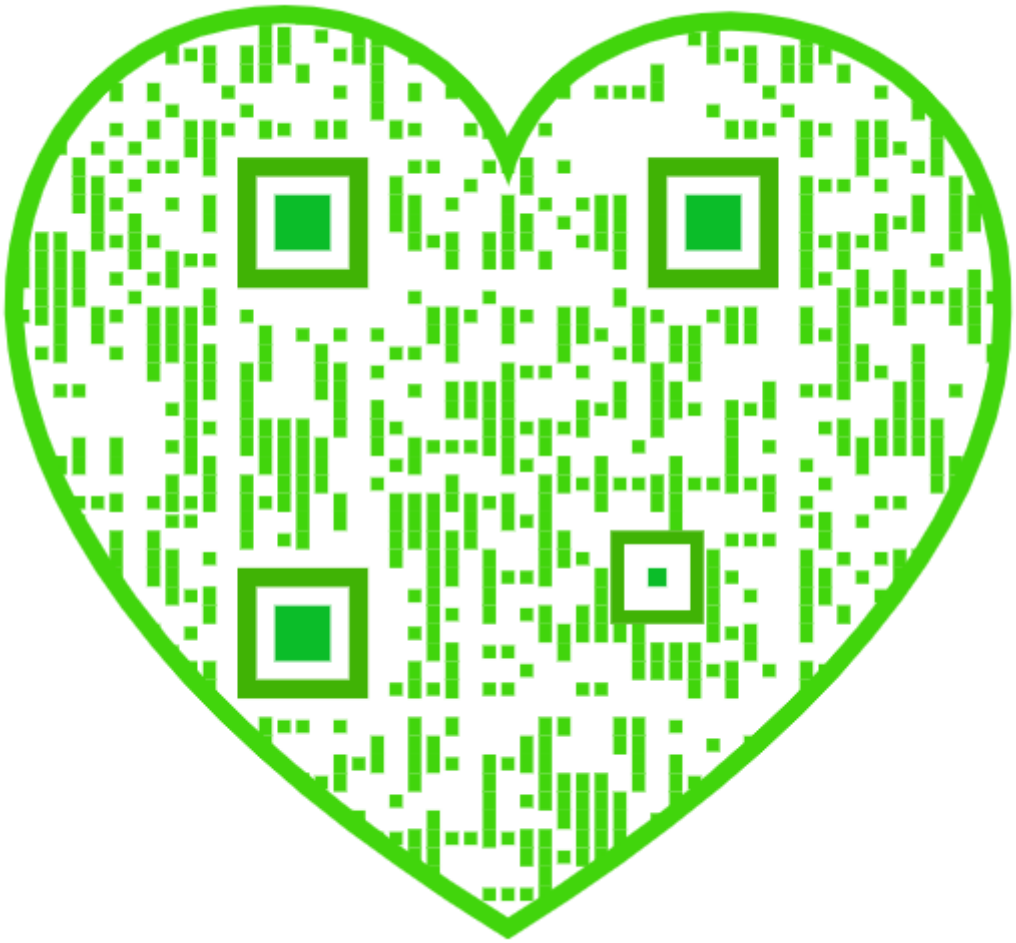

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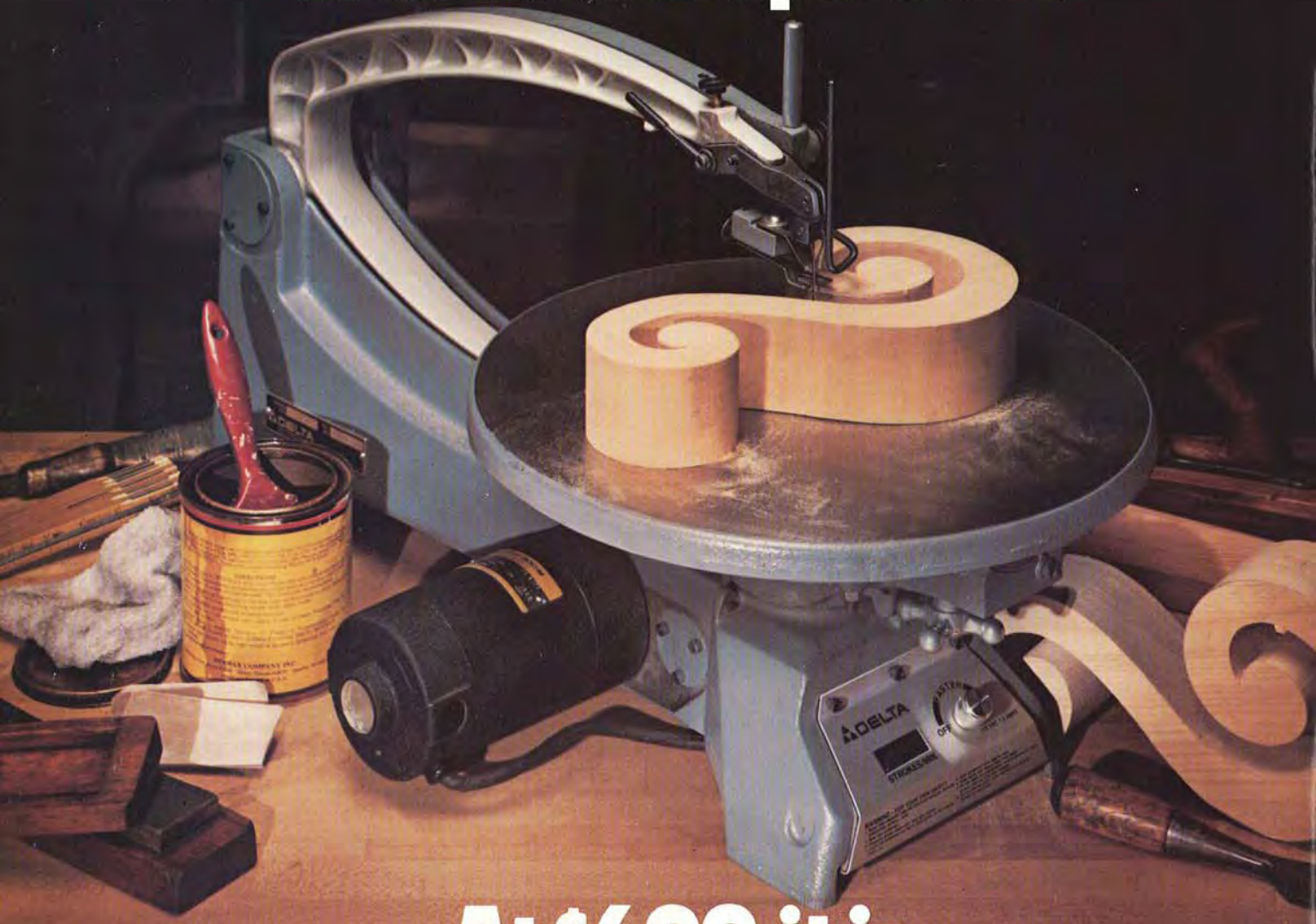

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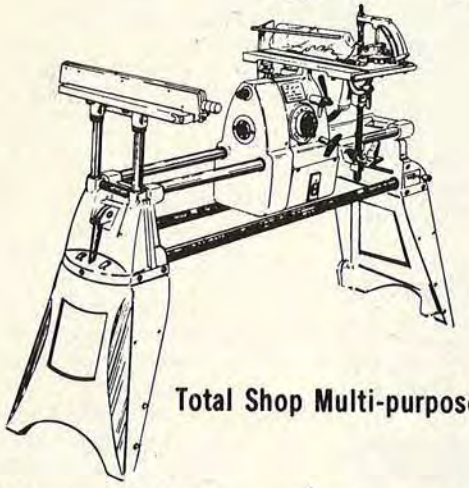
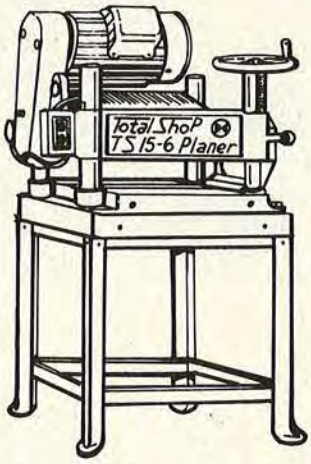


Total Shop Multi-purpose Tool



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December 1986 • Vol. 3, No. 6 • Issue No. 14

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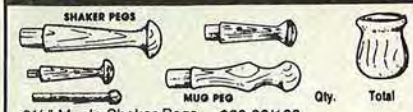

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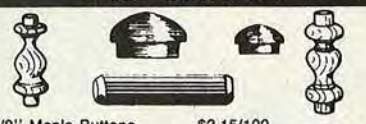

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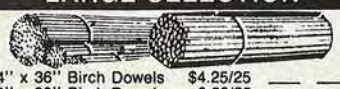

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WOOD

DECEMBER 1986 **ISSUE NO. 14**

WOOD PROFILE

HOLLY: THE SNOW-WHITE WOOD OF WINTER 33

Deck the halls with the fairest of them all! The whitest wood known, holly makes an interesting feature accent.

CRAFTSMAN CLOSE-UP

CABINETS BY HARGIS 34

Three generations of the Hargis family keep building cabinets the way their quality-conscious forefathers did and share with you some of their woodworking wisdom.

SHOP-TESTED TECHNIQUES

FACEPLATE TURNING 38

It doesn't take long to get hooked on the joy of seeing a beautiful bowl shape up on your lathe. Follow our step-by-step guide and you'll soon be turning out faceplate projects every chance you get.

NOW YOU CAN BUILD IT

STACK 'EM UP LAMINATED BOWL 44

Stack laminating goes a step beyond bowl-turning basics. This striking example features stacked-up squares of African padauk and oak veneer.

A CLASSY COVERED CANDY CADDY 46

Or how about topping off a faceplate project with a tight-fitting lid? You'll find this one a lot easier to turn than it is to say.

FOLK TOYS 48

Whimmydiddle, Flapjack, See Saw, Climbing Bear, Spindle Top, and Chickens Pecking...plans and patterns for six playthings from America's past. Each of these easy-to-make stocking stuffers has its own story to tell.

POLYMERIZED TUNG OIL: THE LOOKING-GLASS FINISH THAT LASTS AND LASTS 52

Bill Lovelace, of Phoenix, Arizona, lets us in on the *right* way to apply his favorite finishing material.

PRACTICAL SHOP GEOMETRY 54

Circles, ellipses and polygons — perplexing shop layout problems with surprisingly easy solutions. Work them out as you read along.

BOWL BLANKS AND BURLS 56

Thinking about turning a bowl from manzanita burl, spalted maple, wild lilac, or some other exotic species? Here's where to get it.

TOOL BUYMANSHIP

TURNING TOOLS: WHAT YOU SHOULD KNOW BEFORE YOU BUY 58

Which cutting instruments does a novice turner really need and which are just nice-to-haves? *WOOD* recommends a starter set.

HOLIDAY SPECIALS FROM THE SHOP

THOROUGHBRED ROCKING HORSE 62

Hitch this spirited mount under your tree this Christmas.

OAK MAGAZINE RACK 66

This project throws you just enough curves to make it interesting.

SANDING BLOCK 70

A smoothie you can make for every woodworker on your gift list.

STYLISH EARRINGS 72

Wooden jewelry for the ladies in your life.

PLAYTIME EXPRESS 74

All aboard for a project toddlers — and even their parents — just can't resist.

SWEETHEART STICKPIN 80

More laminated-wood jewelry that's a sweetheart to make.

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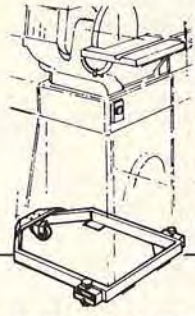

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THE EDITOR'S ANGLE

All Work and No Play Makes *WOOD* a Dull Magazine

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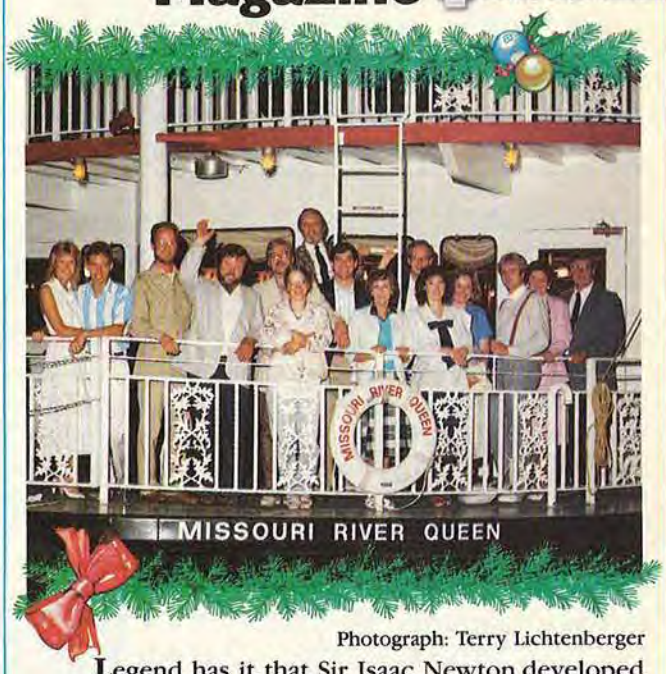

Photograph: Terry Lichtenberger

Legend has it that Sir Isaac Newton developed the theory of gravity after being bonked on the head by a falling apple. And more recently, 3M Company's Art Fry came up with the idea for the Post-it Brand Note Pad (those adhesive-backed notes we like to stick on everything) while singing from his hymnal at church one Sunday. Let's face it! These two guys were terribly lucky. One was taking a break on a nice autumn day when his idea hit. And the other just wanted a good way to mark the location of the current day's selection of hymns.

It's a lot like that in the magazine business. You never know where or when you're going to think of something you're sure the readers will love. Sometimes, the office just isn't the best place to get creative. Sometimes, it's Kansas City, Missouri, as the *WOOD* staff found out this past summer. For two days and two nights, we locked ourselves away in a hotel conference room trying to decide what articles, projects, and techniques to include in upcoming issues. And you know something, it worked! We've got almost everything mapped out through the February, 1988 issue. I'm biased, I know, but I think you've got some great material coming your way.

In case you're wondering how we had time to take a cruise on the Missouri River Queen with our spouses if we were so busy, please reread the headline at the beginning of this article.

Have a Happy Holiday Season!

Larry Clayton

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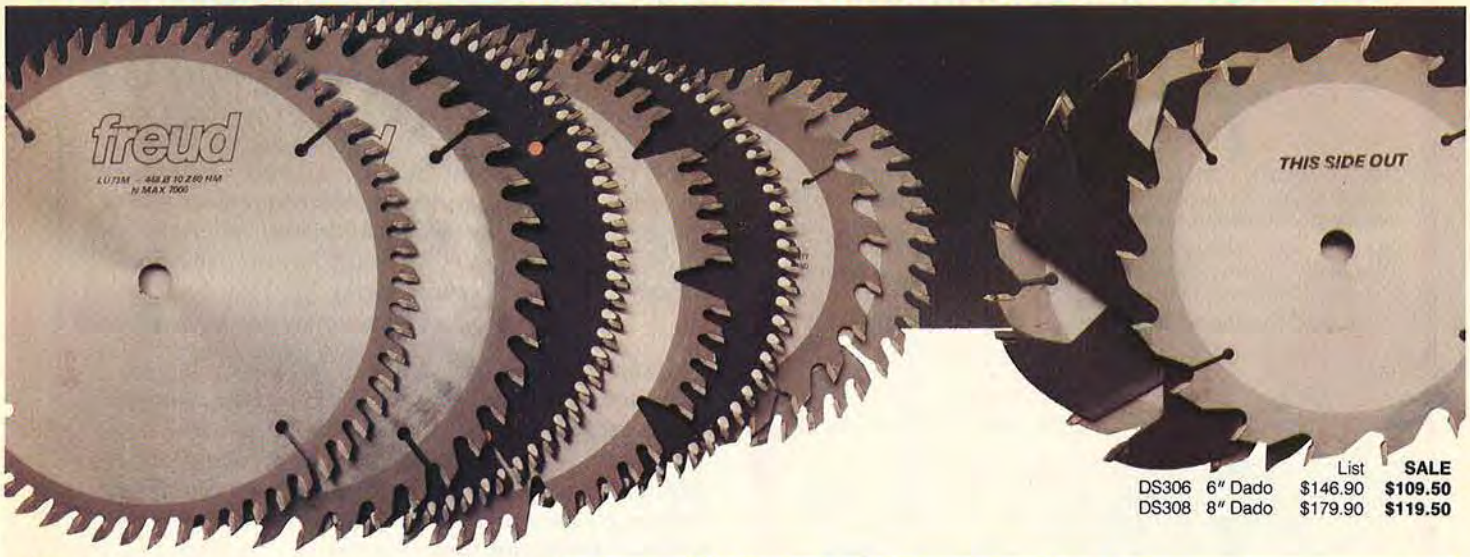

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The Plate Body: Milled tool steel will be found in the plate body of the premium blades. At Freud, after the tool steel is milled, it is heat treated and surface ground on both sides. It is then hammered to provide the proper tensioning and then hand checked for trueness. This will ensure that the blade will stretch evenly when run at high speeds.

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General Cross Cutting	LU73M 008	NR	G	G	F	G	8	48	71.65	51.99
	LU73M 009						9	54	79.65	53.99
	LU73M 010						10	60	79.65	44.90
Chip Free Cutting Plastic Laminated	LU78M 008	NR	NR	G	E	F	8	64	93.67	84.99
	LU78M 010						10	80	117.02	82.90
	LU78M 012						12	96	140.87	115.99
	LU78M 014						14	108	166.27	141.99
Aluminum Cutting	LU80M 008	For Aluminum Cutting Only					8	64	93.67	65.90
	LU80M 010						10	80	117.19	82.99
	LU80M 012						12	96	143.49	106.99
	LU80M 014						14	108	170.04	135.50
Precision Cross Cutting For Wood and Veneers	LU82M 008	NR	G	G	G	G	8	48	78.34	55.99
	LU82M 009						9	54	86.40	60.99
	LU82M 010						10	60	86.40	47.90
	LU82M 012						12	72	123.36	86.99
	LU82M 014						14	84	161.49	110.99
Combination Blade. 4 ATB Teeth & 1 Square Tooth.	LU84M 008	G	G	G	F	G	8	40	71.53	43.99
	LU84M 009						9	40	70.99	43.99
	LU84M 011						10	50	74.51	44.50
	LU84M 012						12	60	112.60	63.99
	LU84M 014						14	70	134.26	96.50
Super Precision Cut Off	LU85M 008	NR	NR	E	E	F	8	64	93.27	59.99
	LU85M 009						9	72	101.98	63.99
	LU85M 010						10	80	110.88	73.50
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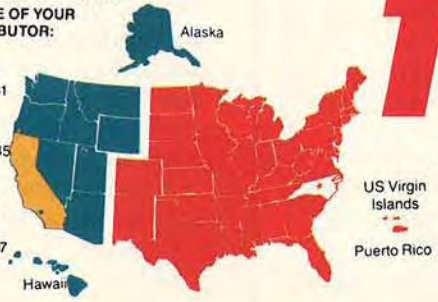

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TALKING BACK

Print this article

We welcome comments, criticisms, suggestions ...even an occasional compliment. The volume of mail we receive makes it impossible to answer every letter, but we promise to do our level best. Send your correspondence to: Letters Editor, Better Homes and Gardens® *WOOD* Magazine, Locust at 17th, Des Moines, IA 50336.

"POP!" GOES THE WOOD JOINT, PART TWO

In your August, 1986 issue (p. 23), you answered Howard Bushnell's question about why his wood joints come loose on tabletops. All your suggestions were just fine, but you neglected to mention the things that will help the most: dowels. In one week I doweled seven tabletops and I have repaired many others. They never come apart.

— H. R. Bockmeier, El Cajon, Calif.

It's hard to argue with success, but we stick with what we told Howard. Dowels add extra strength, but a properly glued joint will hold just fine without them — provided you're mating edge grain to edge grain, that is. End grain joints are a different matter. By all means reinforce them with dowels, splines, or tongues and grooves.

SMOOTH SANDING IN TIGHT SPOTS

With a 1/2" clearance there are several solutions, depending on finish and squareness required.

My first choice is a drill and a carbide burr. The minimum diameter I have found is 1/8" and go up to 3/4". Cost: About $14. Using a drill press solves the squareness problem.

Second choice is by hand, using carbide sandpaper. It comes in three grades; coarse, medium and fine. The sheets have steel backing which keeps it stiff yet follows any contour. Cost: About $3 for a 4x11" sheet.

I get my 1/8" carbide burrs from Wood Carvers Supply, Inc., P.O. Box 8928, Norfolk, VA 23503. Carbide sandpaper can be obtained from Sears. They also carry some carbide burrs but not as small as 1/8".

— Fiske C. Saunders, Avalon, Calif.

There you have it folks, tips for sanding in those tough, tight places, and suggested sources for the materials. Many thanks, Fiske, for sending them along for WOOD *readers.*

BALANCING ACT

WOOD *heard from several readers who were unfamiliar with the "balance sheet" called for in the Bill of Materials for our "Double-Duty Table-Saw Extensions" project (August, 1986 issue, p. 64). Guess we goofed in not explaining what a balance sheet is and why you need one, so here goes:*

As you probably know, any unsupported panel, such as a cabinet door or tabletop, could absorb

Continued on page 10

Build This Beautiful Wooden Ship Model

No. AL100B

Wouldn't you love to build this historic ship model? It's a true-to-scale, 21" replica of the 2-masted schooner *Swift*, a Virginia pilot boat of 1805. Well, now you can! And you don't have to be a skilled craftsman to do so.

It really isn't hard

Even if you've never built a model before, you can experience the relaxing pleasure and pride of accomplishment that is offered by this fascinating hobby. You can build the *Swift*. The secret's in our kit, designed especially for the first time modeler, with pre-cut parts that make assembly easy. Clear, large scale plans and instructions that virtually take you by the hand and guide you every step of the way through hours of the most relaxing fun you'll ever have. And when completed – a museum quality model you'll display with pride, with gleaming brass fittings, walnut planked hull, delicate rigging – lifelike in every detail.

Quality you can see and feel

The materials in our kit may be better than those used in the original *Swift*. The keel section and frames are pre-cut plywood, ready for quick assembly. The *Swift*'s hull is planked twice; once with thick, flexible limewood for strength, then overlaid with planks of African walnut for lasting beauty.

You don't have to make the fittings – we've done that for you. Our kit contains ready-to-use blocks and deadeyes of rare, yellow boxwood. We include eyelets, bracers and belaying pins – over 70 parts of solid brass! Even the cabin door hinges are brass, as are the 250 miniature nails you'll use to fasten the planking to the hull and deck. And, since the original wooden *Swift* had no plastic parts, our kit doesn't either – anywhere!

Once completed, you can proudly mount your *Swift* on a wooden display pedestal – it's included free with the kit.

Creative? And how! Overwhelming? Not a bit! But be prepared for hours of the most challenging, engrossing, relaxing fun you've ever had.

Order Now & Get A Free Book

Order your *Swift* now and you'll receive a copy of *Ship Models from Kits*, a 110 page beginner's guide which normally retails for $7.95. This clearly illustrated handbook gives step-by-step instructions for building the perfect ship model. And it's yours FREE when you buy the *Swift* kit at a special low price of $24.95.

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You don't need a whole workshop full of tools to build the *Swift* – just the basics. To get you started, we've put together a tool package with all the tools you'll need – at a special low price. You'll get: hobby knife, mini-hammer, pliers, 2 files, ruler, 3 drill bits, 3 blades, razor saw blade, tweezers, sandpaper, glue and Swedish wood oil – a $34.95 value, but now only $19.95 when you purchase the *Swift*. You'll even get a tool box 10" long, 4½" wide and 2½" deep to store everything. It's perfect for the beginner!

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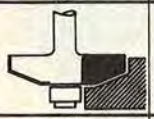	#15	RAISED PANEL	20° Angle	1-5/8"	1/2"	25.00
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TALKING BACK

Continued from page 8

moisture at an uneven rate and warp if you don't seal both sides of the panel. If you're applying finish, you should coat both sides of the panel. Same goes for plastic laminate, but why waste costly colored laminate on a surface that will rarely if ever be seen?

Brown in color and much thinner than ordinary laminates, balance sheet costs only about half as much. Some plastic laminate dealers stock it; with others you may have to special order.

WHAT POWER TOOLS TO BUY: TWO READERS WRITE

Last issue, we responded to WOOD *subscriber Ray Amon's question about what power tools to buy for his narrow shop. We asked you readers for* your *opinions on the subject, and here are two of the letters we received:*

No. 1 would be either a table or radial-arm saw.

No. 2 would be a jointer. How many projects can you make where it isn't necessary to joint and edge-glue boards together?

No. 3 is a *portable* belt sander. It is possible to use a portable belt sander as a stationary sander; however, it is very tough to use a stationary sander as a portable.

No. 4 depends on what your plans are concerning projects. If you plan to use projects that don't use standard ¾" stock, or if you plan to make projects that will consume 400-500 board feet of lumber (which isn't really all that much), the next choice is a planer. Black walnut and cherry sell for about $3 per board foot at a lumberyard in my area. At a sawmill, it can be purchased for $1.25 per board foot. That's quite a savings if you have a planer.

Next comes **No. 5,** a band saw for resawing and cutting curved pieces. If plans include anything with round legs or turnings, next choose **No. 6,** a lathe, and then **No. 7,** the drill press. After this, add a router and bits, **No. 8.**

— David Miller, Annville, Pa.

I recommend a multipurpose power tool such as a Shopsmith. Like Ray, I have limited shop space, so I purchased a Shopsmith Mark V a few years ago. This machine requires about as much space as a bicycle and has adequately met nearly all of my woodworking requirements.

Thanks for producing a top-notch magazine. Please keep up the good work!

— Paul Webber, Amarillo, Tex.

Thanks for your thoughts, guys. Incidentally, Paul, we're planning a report on multipurpose tools for an upcoming issue. One WOOD *staff member swears by his Shopsmith, too.*

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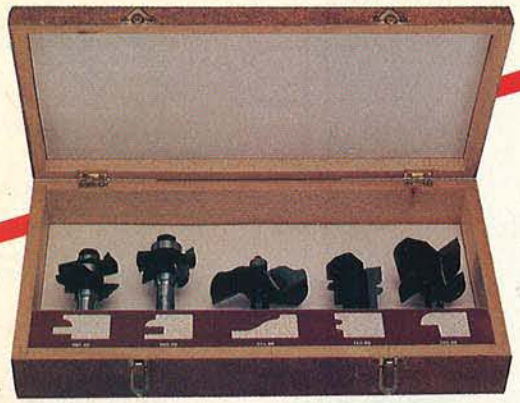

ROUTING

Freud's new 5 piece router bit door system allows you to produce raised panel cabinet doors with your ½" chuck router. Each bit is made with the finest carbide available and sharpened with a 600 grit diamond wheel.

The bit profiles are: rail and stile, raised panel door lip, glue joint. The bits come in a wooden, box jointed case for ease of storage.

As a set, the 94-100 list for **$248.00** ..... Sale Price **$199.00**

SHAPING

Freud's new 5 piece cabinet set for the ¾" - ½" shaper comes with rail and stile, raised panel, door lip and glue joint cutters. A box jointed, wooden case is included for ease of storage and prevention of damage.

The cutter profiles are: rail and stile, raised panel door lip, glue joint.

The cutters are made with the highest of manufacturing standards and materials. If purchased individually, they would cost $510.00.

As a set, the EC-900 list for **$449.00** ..... Sale Price **$349.00**

BORING

Freud's new 16 piece Forstner bit set comes in a box jointed, wooden storage case. These bits, guided by their rim, will create a clean flat bottom hole in wood. A special heat treated steel is used in their production to assure long lasting edges.

The 16 bits range in size from ¼" to 2⅛" in ⅛" increments. These bits will fit any stationary or portable drill using a ⅜" or larger chuck.

The FB-100 Forstner bit set list for **$249.00** ..... Sale Price **$199.00**

DRILLING

Freud's new 50 piece drill bit set comes with a heavy duty carrying case for ease of storage and protection. This set consists of: A) 25 high speed steel bits (1/16 - ½ in 1/16 increments) B) 4 high speed steel bits for use in sheet metal (¼, 3/16, ⅛, 3/32) C) 6 chrome vanadium steel brad point bits for use in wood (⅛, 5/32, 3/16, ¼, 5/16, ⅜) D) 6 carbide tipped masonry bits with hex shanks (5/32, 3/16, 7/32, ¼, 5/16, ⅜ E) 1 center punch, 2 Allen keys and 6 depth stops to set bits at pre-determined depths.

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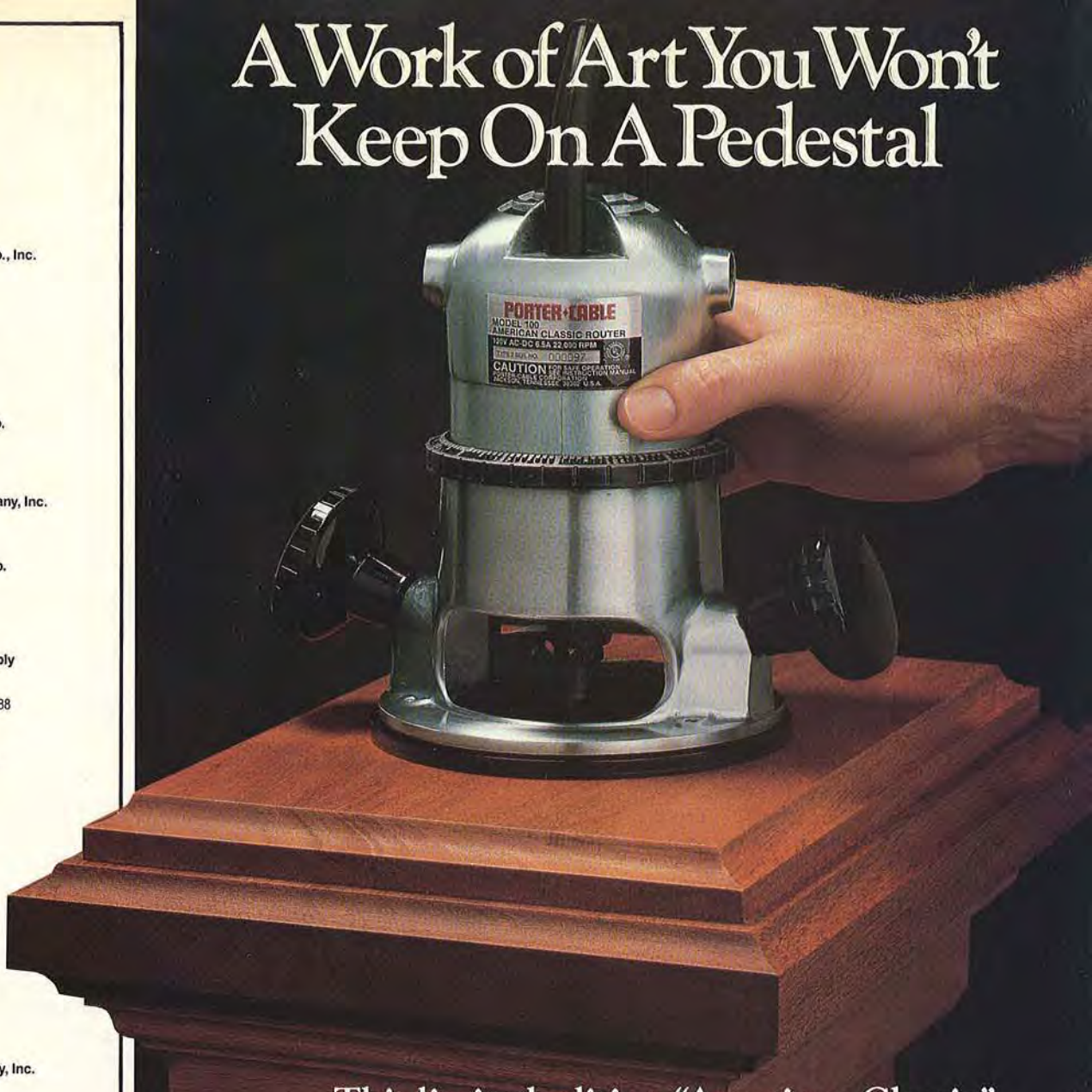

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In woodworking, as in life, no one knows it all. But through experience, we all discover — or stumble onto — better, safer, faster, or easier ways to do things. When we devise interesting tips or techniques, we'll share them with you in this column. And when you send us your favorites, we'll pay you $25 for each submission we publish. No shop tips can be returned. Mail your tips to:

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ON THE LEVEL

When using a hand-held electric drill, it's difficult to determine if your bit is perpendicular to the surface.

TIP: Here's an easy aid if you're drilling parallel to the floor with spade bits. Before inserting the bit into the chuck, slip a large washer over the shaft. If the bit is parallel to the floor, the washer will neither climb up nor walk down the shank.

— Robert A. Grace, St. Joseph, Mich.

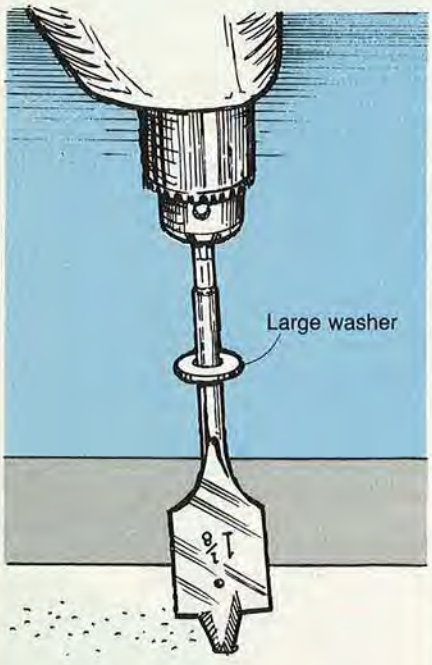
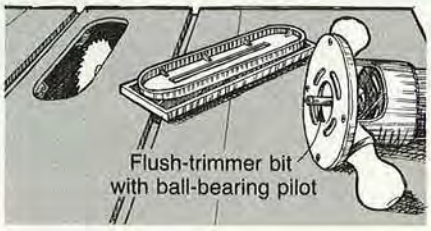


TABLE INSERTS A SNAP TO MAKE

Despite the accuracy of dado and shaper blades, distorted cuts can occur when the workpiece is not supported by the table insert.

TIP: You can make several table inserts with a router and thin plywood scraps. With double-faced tape, join the metal dado insert with a rough-sawn plywood blank. Cut the plywood to the exact size with a laminate flush trimmer in your router. Keep several blanks on hand for a variety of tasks. The zero-clearance cutting increases operator safety, too.

— Michael Cosgrove, Goose Creek, S.C.

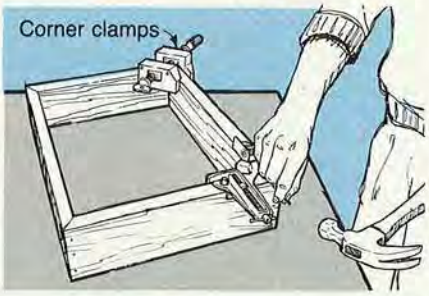


PICTURE THIS: BETTER CABINETS

One person can struggle untold times trying to align and assemble a box or cabinet.

TIP: No matter what type of joints you've cut, a picture-frame clamp works like another pair of hands in the workshop. Position two adjoining sides and tighten a corner clamp over the joint. Repeat the procedure with an adjoining joint. Now loosen a clamp, reposition the pieces for an accurate fit and tighten. Join the pieces with screws or nails and repeat the procedure with the other joints.

— David W. Schweizer, Fellsmore, Fla.

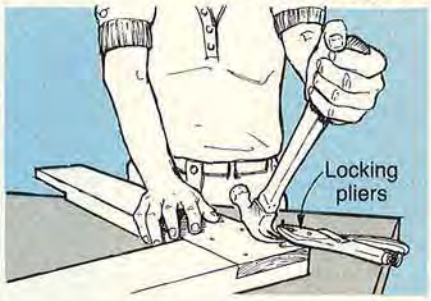


GET A GRIP ON SLIPPERY NAILS

It takes the leverage of a claw hammer to remove difficult nails, but some nails slip right through the claw. If you try a different angle to grab the nail, you could mar or dent the wood.

TIP: Clamp locking pliers over the nail shank, slide the claw under the pliers jaws, and remove the nail with ease.

— Don Butler, Waterford, Pa.

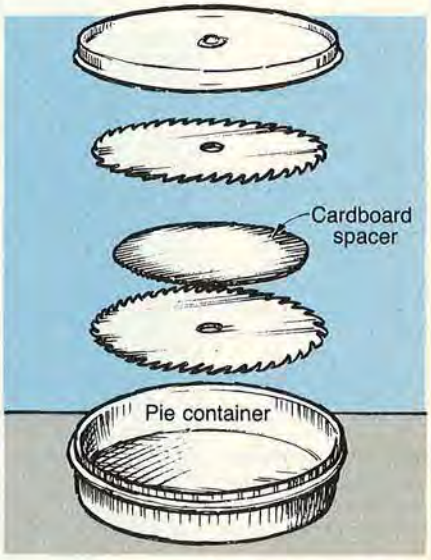


KEEPING BLADES IN APPLE-PIE ORDER

Table-saw blades pose fascinating dangers to curious children exploring in the workshop.

TIP: Plastic containers for keeping and transporting pies safely store saw blades, too. Separate the blades with cardboard spacers. The lids form a tight seal on the 12-inch containers; they also seal out moisture.

— Shauna Beintema, San Diego, Calif.



Continued on page 16

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TIPS FROM YOUR SHOP (AND OURS)

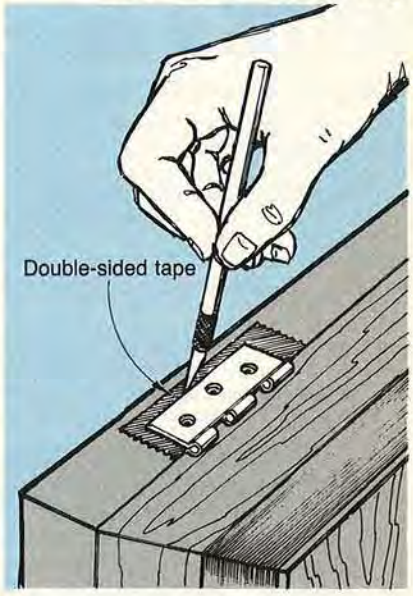
Continued from page 14

DOUBLE-FACED TAPE TO THE RESCUE

No matter how hard you try, hinges seem to move slightly when you mark for stock removal.

TIP: Double-faced tape provides an excellent opportunity to accurately position new hinges. Use a sharp knife and mark out the hinge outline and screw holes. Drill the holes and then remove the stock.

— From the *WOOD* shop

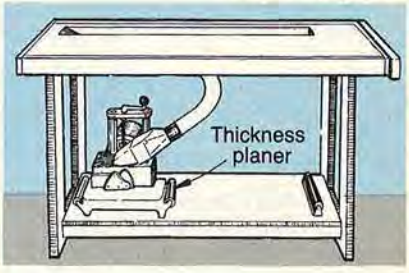


LOW AND INSIDE PLANER

Many woodworkers don't have extra work surface to keep a thickness planer set up.

TIP: The space you need for a thickness planer may be located beneath your workbench. There is plenty of room under many workbenches for compact planers, such as the Ryobi AP-10.

— Larry Naumann, St. Louis, Mo.

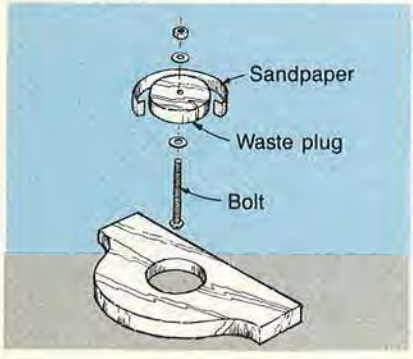


SAND THE HOLE THING

Hole cutters are great for their intended use, but sanding the inside of the circle is a pain.

TIP: Use the waste plug from the hole to build a custom drum sander. Cut a 1/32"-wide slot about 3/8" deep into the side of the plug. Cut a piece of sandpaper the thickness of the plug by the circumference plus 3/4". Slip a bolt through the plug's hole, and tighten a nut on the back side. Mount this sander in your drill chuck and sand to the desired smoothness.

— Rusty McKnight, Gadsden, Tenn.

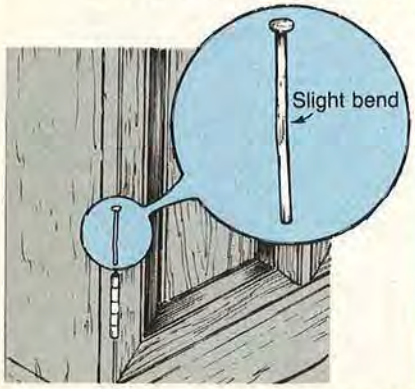


BENT ON SUCCESS

Well-used hinges have a tendency to loosen with age. If the problem goes unchecked, some doors won't close properly.

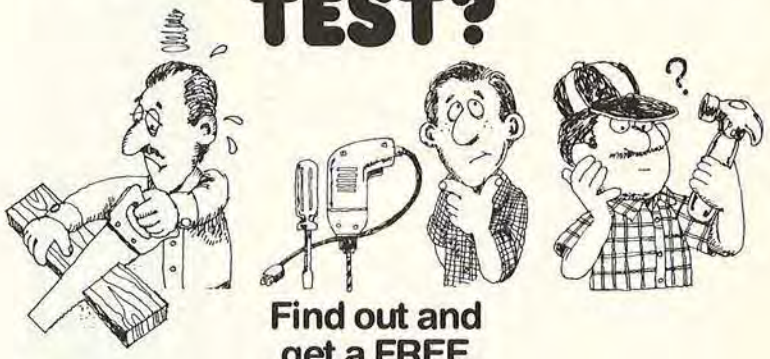
TIP: A bent hinge pin makes a lot of difference in how an old hinge operates. Tap the pin slightly in the center to create a bend. The hinge should open and close with a smoother action.

— From the *WOOD* shop



Continued on page 19

WHAT DO YOU SCORE ON THIS WOODWORKER'S TEST?



Find out and get a FREE MARK V Information Kit!

The test takes only a minute!

Just answer each question, total your score, then fill out the coupon and send it to Shopsmith.

We'll send you a FREE MARK V Information Kit.

So grab a pen or pencil and get started!

Circle A, B or C for each question:

1 How much experience have you had in woodworking, home repair and maintenance?
(A) Little or no experience
(B) Some experience
(C) Quite a bit of experience

2 Which phrase best describes your workshop?
(A) A selection of hand and portable power tools
(B) A table or radial arm saw, hand and portable power tools
(C) A good selection of stationary and portable power tools

3 How involved do you want to become with woodworking, home repair and maintenance?
(A) Not very involved
(B) Moderately involved
(C) Heavily involved

4 What's the likelihood that you'll buy a woodworking tool within the next year?
(A) Not likely
(B) Somewhat likely
(C) Highly likely

5 Which best describes you?
(A) I do some home repairs and maintenance
(B) I do some woodworking and a variety of home repairs
(C) I'm primarily interested in fine craftsmanship woodworking

How to find your score:

Simple! Count nine points for each (A), six for each (B), three for each (C). Then enter your total on the coupon, fill in your answer for Question #5, include your name and address and mail to Shopsmith!

We'll send you your FREE Information Kit on the Shopsmith MARK V, the complete home workshop that combines the five power tools needed most in one economical unit! *It's the tool to start with... the system you grow with!*

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RYOBI TOOLS

		List	Sale
S500A	3x5½ Finish Sander	70	41
SU6200	Finishing Sand. ½ Sheet	142	88
B7075	3x21" dustless Belt Sand.	179	116
B7100	3x24" dustless belt Sand.	208	140
B7200A	4x24" dustless Belt Sand.	269	165
D100VR	3/8" VSR 0-1200 rpm drill.	91	49
W640	7¼" 13 amp circular saw	158	99
W740	8¼" 13 amp circular saw	171	109
JS60	Jig Saw-Single Speed	172	99
JSE60	Jig Saw-electronic v/speed	198	123
R150	1 H.P. Plunge Router	138	86
R330	2 H.P. Router	220	138
R500	3 H.P. Router	265	163
E3800	Drywall screwdriver 0-4000	126	79
L120U	3⅝" Planer	142	89
BD1020R	3/8" 2-spd Cordless Drill w/free holster-Xtra special buy	148	95
TS251U	10" Mitre Box	300	169
SG1150C	4½" H.D. Mini-Grinder	99	59

YOUR ATTENTION PLEASE!

All Above RYOBI TOOL Prices

Take Additional 10% OFF Sale Prices

MILWAUKEE TOOLS

		List	Sale
0224-1	3/8 drill 4.5A magnum	173	109
0234-1	½ drill 4.5A magnum	173	112
0244-1	½ drill 4.5A magnum	173	115
0222-1	3/8 drill 3.3A 0-100 rpm	159	99
0228-1	3/8 drill 3.3A-0-1000 rpm	139	92
0375-1	3/8 close quarter drill — NEW — 3.5 amp	191	118
0210-1	3/8 cordless drill — NEW — 2 speed	189	95
6539-1	cordless screwdriver — NEW — 190 RPM	99	59
1007-1	½" drill 4.5A D-Hdle	217	145
1107-1	½" drill 4.5A D-Hdle	222	145
3300-1	magnum rt angle drive kit	271	170
3102-1	Plmbrs rt angle drill kit	287	180
1676-1	HD Hole Hawg w/cse 2 sp	363	235
5395	3/8 sgle sp hammer drill kt	203	150
5397	3/8 var sp hammer drill kit	208	155
5371-1	HD mag. hammer drill ½"	313	207
5373	HD mag. ham. drill 3/8"	262	175
6511	2 speed Sawzall w/case	197	122
6226	port band saw 2 sp w/case	416	280
6234	TSC band saw port w/case	416	280
6405	8¼" circ. saw 13 amp	191	127
6460	10¼" " 15 amp w/case	380	245
6165	12" Chop saw 15 amp 4200 R.P.M.	311	189
6255	v/sp Jig Saw 3.8 amp	217	140
6245	sgle sp Jig Saw 3.8 amp	191	125
6012	⅓ sheet HD Orb. sander	173	110
6014	½ sheet HD orb. sander	184	112
5660	1½ HP router 10 amp	289	175
5680	2 HP router 12 amp	342	220

DRYWALL SHOOTERS

6753-1	3.5 amp 0-4000 rpm new	125	79
6747-1	4.5 amp 2500 rpm	157	100
6750-1	4.5 amp 0-4000 rpm	141	90

NEW FROM RYOBI

MODEL AP-10 — 10" Surface Planer

WEIGHS ONLY 58 LBS.

LIST 659.00 — SALE 375.00

MILWAUKEE Super Specials!

★★ BRAND NEW ★★

Model 0212-1 Cordless Variable Speed 3/8" Drill

LIST. . .209.00 SALE. . .125.00

Model 6145 — 4 1/2" Sander-Grinder

LIST. . .149.00 SPECIAL SALE. . .85.00

Go Cordless with MILWAUKEE

#6305 — 6½" Cordless Circular Saw

12 volt — 1 Hour Charge

Cuts (80) 2x4's (Pine)

List Price 229.00 ★ SALE PRICE 119.00

FREUD SAW BLADES

Univ. Bore — Professional Series

CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
PS203	Gen'l Purp.	7½"	24	27.24	17.50
PS303	Fine cutting	7¼"	40	32.97	20.50

⅝" Bore — Industrial Grade

CARBIDE TIPPED SAWBLADES

Item No.	Description	Diam.	Teeth	List	Sale
LU72M010	Gen-l Purp.	10"	40	68.58	34
LU81M010	Gen-l Purp.	10"	40	69.30	35
LU73M010	Cut-Off	10"	60	79.65	36
LU82M010	Cut-Off	10"	60	86.40	44
LU84M010	Combination	10"	40	70.99	36
LU84M011	Combination	10"	50	74.51	37
LU85M010	Super Cut-Off	10"	80	110.88	62
LM72M010	Ripping	10"	24	64.85	34
DS 306	6" Dado			139.00	92
DS 308	8" Dado			170.00	105
TR 100	3 blades & Dado set			399.00	255

MAKITA CORDLESS FESTIVAL OF VALUES

Model		List	Sale
4300DW	Jig Saw	158	99
5081DW	3⅜" Saw Kit	174	95
5600DW	6¼" Circular Saw	224	125
9035DW	Finishing Sander	128	73
6010DWK	3/8" Cordless Drill Kit	152	88
6010SDW	3/8" Cordless Drill	84	45
8400DW	3/8" Hammer Drill	188	105
DA3000DW	3/8" Angle Drill	176	98
6010DL	3/8" Drill w/Flashlight	162	89
6012HDW	3/8" 2 spd Driver Drill w/Bat & Metal Case	178	98
DK1002	3/8" Drill w/Flursnt Lt	164	90
6710DW	Cordless Screwdrvr Kit	148	84

LEIGH DOVETAIL JIGS

Model	List	Sale
TD514	149	125
TD514L	219	195
D1258-12	299	245
D1258-24	359	275

MAKITA BRAND NEW X-TRA SPECIAL

Model		List	Sale
5007NBA	7¼"Saw w/Elec. Brake	186	115
5008NBA	8¼" Saw w/Elec. Brake	212	130

MAKITA TOOLS

		List	Sale
BO4510	Sander	86	43
9900B	3"x 21" belt sander	218	119
9924B	3"x 24" belt sander	208	130
9924DB	3"x 24" b/sand. w/bag	234	130
9035	⅓ sheet finish sander	88	48
9045B	½ sheet finish sander	184	90
9045N	¼ sht fin. sand. w/bag	184	105
4200N	4⅜ circ. saw 7.5 amp	168	93
5008NB	8¼ circ. saw 13 amp	198	105
5201NA	10¼ circ. saw 12 amp	398	215
4300BV	v/sp jig saw 3.5 amp	218	120
4301BV	orb v/sp jig saw 3.5 amp	230	125
JR3000WL	2 sp recip saw w/cse	188	120
JR3000V	vs recip saw w/case	198	120

★★★ MAKITA TOOLS ★★★ SPECIAL PROMOTION

LS1000	New 10" Mitre Box	368	198
792210-7A	Carbide Bld for above	49	31
9820-2	Blade Sharpener	268	159
741074-9	60 (coarse) Grdg Whl	33	23
741070-7	1000 (med) Grdg Whl	31	22
741071-5	6000 (fine) Grdg Whl	43	30
1900BW	3¼" planer w/case	178	92
1100HD	3¼" planer w/case	312	160
3608BK	¾ hp router w/case	132	85
3601B	1⅜ hp router	198	115
3700B	½ hp trimmer 26,000 rpm	148	82
BO4530	6" Round Sander	90	48
DA3000	3/8" angle drill	188	105
DP4700	½ v/sp w/rev" 4.8 amp	172	92
HP1030W	3/8 v.s.r. hammer drill w/case	158	98
6300LR	½" angle drill w/rev	268	152
841988-2W	½" s sp. hammer drill w/case	268	150
GV5000	Disc Sander	98	53
6800DB	2500 rpm 3.5 amp	134	79
6800DBV	0-2500 rpm 3.5 amp	144	89
6801DB	4000 rpm 3.5 amp	134	79
6801DBV	0-4000 rpm 3.5	144	89
2030n	12" planer/jointer	2360	1475
2040	15⅝" planer	1930	1195
1805B	6⅛" planer kit w/case	466	265
JV1600	var. speed jig saw	162	89
JV2000	var. speed orb. jig saw	188	100
5005BA	5½" circular saw 8 amp. with brake	176	98
9207SPC	7" var/speed electronic sander/polisher	238	130
9303BH	4½" sander-grinder kit	146	95
4014NV	var/speed blower	138	79

DELTA — BRAND NEW

Model		List	Sale
34-080	10" Miter Box w/rotary table	279	179

○○○ *Repeat of a Sellout* ○○○

DELTA — SUPER SPECIAL

40-601	18" Electronic v/sp scroll saw — complete	1117	679

WE NOW HAVE A COMPLETE STOCK OF BOSCH CARBIDE TIPPED SHAPER CUTTERS

ALL SALE PRICES AT 40% OFF LIST.

buying from Seven Corners Hdw. . . . is a good Rule to follow.

Model	STANLEY	List	Sale
33-116	PL-316 ¾" x16' Rule	15.95	7.50
33-320	PL-320 ¾" x 20C Rule	16.95	7.95
33-425	PL-425 1" x 25' Rule	18.95	8.95
33-430	PL-430 1" x 30' Rule	20.95	9.95

1986 TOOL CATALOG AVAILABLE

Call Toll-Free 1-800-328-0457 — In Minnesota Call (612) 224-4859

4 WAYS TO BUY: CHECK — MONEY ORDER — VISA — MASTERCARD

SEVEN CORNERS ACE HDW. Inc.

216 West 7th St. • St. Paul, MN 55102 • Est. 1933

SAW-ATHON by PORTER CABLE

#314	4½" Trim Saw	
List 180		SALE 109
#346-1	6½" Top Hdle	
List 161		SALE 100
#617	7¼" Push Hdle	
List 166		SALE 96
#587	7¼" Speedtronic	
List 199		SALE 125
#315-1	7¼" Top Hdle	
List 166		SALE 96
#368-1	8¼" Top Hdle	
List 176		SALE 110

BELT SANDERS by PORTER CABLE

#363 — 4" x 24" w/o Bag	
List - 280	Sale - 185
#362 — 4" x 24" w/Bag	
List - 295	Sale - 198
#503 — 3" x 24" w/Bag	
List - 510	Sale - 350

DELTA

#34-410 — 10"

CONTRACTORS SAW w/Stand & 1½ H.P. Motor

SPECIAL PRICE 679.00

FACTORY REBATE 100.00

579.00

FREE DELIVERY TO 48 STATES

TOOLS ON SALE™

AMERICA'S LOWEST PRICED TOOLS

★ ***PLUS — FREE FREIGHT*** ★

ON EVERY ITEM

SUPER CORDLESS SPECIALS from BLACK & DECKER

Model	DRILL KITS	List	Sale
1930	3/8" rev/hi speed	165	110
1950	3/8" High Torque	165	110
5930	Reversible Hammer	179	120
1970	3/8 rev/hi torque screwdriver	179	120
1980	Rev/adj. clutch Scrudrill	179	120

BRAND NEW! SUPER SPECIALS from MILWAUKEE

0214-1	3/8 c/less drive/drill	189	109
8975	H.D. heat Gun, 11.6A Low 570°F - High 1000°F	81	49
5920	belt sander 3x24 w/o bag	315	199
5925	belt sander 3x24 w/bag	315	215
5930	belt sander 4x24 w/o bag	326	209
5935	belt sander 4x24 w/bag	348	214

PORTER-CABLE = NEW ITEMS +

Model		List	Sale
655	Drywall Driver 0-4000 Rev	115	85
367	3¼" Plane 6.5A	170	115
5009	Mortise & Tenon Jig	50	34
351	3" x21" Belt Sander	189	125
352	3" x21" Belt Sndr w/bag	199	135
9810	Cordless Screwdrvr kit	175	115
320	Abrasibe Plane 3A	129	91

★★ *ROUTER RIOT* ★★ by PORTER-CABLE

Model		List	Sale
100	7/7 H.P. 6.5 amp	141	98
630	1 H.P. 6.8 amp	150	100
690	1½ H.P. 8 amp	194	130
691	1½ H.P. D-Hdle 8 amp	218	145
536	1½ H.P. Speedmatic Double Handle	300	190
537	1½ H.P. Speedmatic Double Handle	315	215
520	3 H.P. Production	460	270
518	3 H.P. Micropressor 5-sp	490	345

TRIMMERS BY PORTER-CABLE

309	3.8 amp laminate trimmer	130	90
310	3.8 amp laminate trimmer	190	135
312	offset base laminate trim	205	140
319	tilt-base laminate trim	215	150

★ *X-TRA SPECIALS* ★

	MAKITA TOOLS	List	Sale
6010DL	C/less Drill w/flashlight-charger & case	174	90
DP3720	3/8 drill Rev. 0-1800 rpm	98	47
6510LVR	3/8 drill Rev. 0-1500 rpm	136	67
6013BR	½" Drill rev. 6 amp	198	100
5402A	16" Circular Saw-12 amp	518	315
2414	14" Cut Off Saw-13 amp	308	169
3612BR	3 HP Plunge Router	318	175
9401	4x24 belt Sander w/bag	268	160

PORTER-CABLE

		List	Sale
696	H.D. Shaper Table	150	105
695	H.D. 1½ hp Router/Shaper	278	190
399	Drywall Cut-Out Unit	100	70
736	V/Speed *Speedtronic* Band Saw	450	330
7564	½" X.H.D. Drill 8 amp	205	145

BOSCH TOOLS

		List	Sale
1581VS	Top Handle Jig Saw	225	126
1582VS	Barrel Grip Jig Saw	126	118
1604	1¾ H.P. Router	199	118
1942	Heat Gun 650°-900°	99	85
1272	3x24" Belt Sander	259	159
1272D	3x24" Belt Sander w/bag	274	169
1273	4x24" Belt Sander	274	169
1273D	4x24 Belt Sander w/bag	289	179

DELTA

		List	Sale
34-010	Motorized Mitre-Box	231	149

★ NEW LOW PRICES ★ PONY CLAMP FIXTURES

Model		List	Sale	Lots of 12
#50	for ¾" Black Pipe	11.23	7.15	79.00
#52	for ½" Black Pipe	9.36	6.10	67.50

JORGENSEN HAND SCREWS

Model	Jaw Length	Open Cap.	List	Sale	Box of 6
#5/0	4"	2"	11.59	7.25	39.15
#4/0	5"	2½"	12.45	8.10	43.75
#3/0	6"	3"	13.36	8.50	45.95
#2/0	7"	3½"	14.36	8.95	48.35
#0	8"	4½"	15.97	9.95	53.75
#1	10"	6"	18.25	11.35	61.25
#2	12"	8½"	20.94	13.60	72.95
#3	14"	10"	26.56	16.75	91.35
#4	16"	12"	34.55	23.75	128.25

JORGENSEN BAR CLAMPS STYLE 37 — 2½" Throat ¼" x ¾"

Model	Jaw Length	List	Sale	Lots of 6
3#3706	6"	7.88	5.50	29.70
#3712	12"	8.73	5.95	32.13
#3718	18"	9.64	6.95	37.53
#3724	24"	10.54	7.35	39.69
#3730	30"	11.76	8.25	44.55
#3736	36"	12.85	8.95	48.33

Who Has The Saws That Cut It Across The Board?

BLACK & DECKER of course!!!

Model	WORM DRIVE SAWS	List	Sale
3050	6½" 12 amp - 4600 rpm	247	169
3051	7¼" 13 amp - 4300 rpm	232	149
3052	8¼" 13 amp - 4300 rpm	247	169
	SUPER SAWCATS		
3047-09	7¼" w/brake - 12.5 amp	226	149
3048-09	8¼" w/brake - 13 amp	240	155
	BUILDERS SAW CAT		
3030	7¼" 13 amp - 5800 rpm	155	100
3035	8¼" 13 amp - 5800 rpm	175	125
3034	7¼" 13 amp - 5800 rpm	162	115
3033	6½" 13 amp - 5800 rpm	162	115
	JIG SAWS		
3157-10	var/sp orb action d/hdl	174	115
3153-10	var/speed 4.5A 0-3100	158	105
3159-10	2/sp orb action barrel grip	178	120
	CUT SAW KITS		
3103	2 sp 6 amp-2400 strokes	163	100
3105	v/sp 6 amp-2300 strokes	170	110
3107	v/sp orb 6A 0-2300 strokes	183	119
4300	Drill Bit Sharpener	289	205
1321	½" drill 450 rpm 6 amp	175	115
4010	Palm Sander	80	48
4015	½ Sheet Finish Sander	160	105
	DRYWALL GUNS		
2034	v.s.r. 0-4000 rpm	121	79
2037	v.s.r. 0-4000 rpm	139	89

"Door Openers" from MAKITA

9501B	4" Grinder Kit	119	55
2708	8¼" Table Saw	348	199
5007NB	7¼" Circ. Saw	158	94

MILWAUKEE BUY OF THE YEAR

Model 6365 — 7¼" Circular Saw

List $169.00 Sale $99.00

Lots of 3 — $289.00

Brand New **• PORTER CABLE**

Model 7548 Top Hdle Jig Saw

LIST 199 — SALE 129.95

Model 7648 Barrel Jig Saw

LIST 199 — SALE 129.95

PORTER-CABLE

		List	Sale
9548	HD v/s bayonet saw w/case	255	169
9627	2 sp. tiger saw kit 8 amp	193	130
9629	V/sp. tiger saw kit 8 amp	204	135
505	H.D. ½ sheet finish/sander	175	100
330	spd bloc sander ¼ sheet sz	87	54
304	Professional 7" disc sander	169	120
305	Professional 7" polisher	169	120
7511	3/8" xtrahvy v/s drill 5.2 amp	164	115
7554	½" xtra hvy drill 8 amp	210	150
9652	Versa-Plane Kit	419	285
9118	Porta Plane Kit	289	190
	DRYWALL SHOOTERS		
7544	5.2 amp — 2500 rpm	158	105
7545	5.2 amp — 0-2500 rpm	158	105

AEG POWER TOOLS

Model		List	Sale
EZ 501	C/less Scrwdrvr Brand New	59	35
EZ 502	C/less Scrwdrvr-190 rpm	98	52
EZ 505	C/less Drill/Driver	139	79
EZ 506	C/less Electronic Dri/Drvr	159	94
EZ 581	C/less Caulk Gun var/sp	179	106
SCR1E	Drywall Screwgun 0-2000	125	74
SCR11E	Drywall Screwgun 0-4000	125	74
BE8RL	3/8" var/sp drill 3.8 amp rev	86	51
BE10RL	3/8" var/sp drill 5 amp rev	125	74
SBE401RL	3/8" Ham Drill v/sp h.d.	88	52
SE2E13RL	½" Ham Drill 2 sp h.d.	169	101
TC25E	Tech Driver v/sp 5 amp	150	89
PC70	7¼" Circular Saw 12 amp	157	93
VS130	Orb Sndr 20,000 OPM ⅓ sh	75	48
VS260	Orb Sndr 25,000 OPM ½ sh	156	88
VSS260	Orb Sndr 25,000 OPM w/bag	189	118
Hbse75S	Belt Sander v/sp 3" x 21"	199	118
BSPE60	Jig Saw Orb v/sp 4.6A w/case	214	127
RSK600	Recip Orb Saw 10 amp	229	136

ROTARY HAMMERS

PHE 16RL	3.8 amp 5/8" capacity in concrete	269	175
PH 210	5.2 amp ¾" capacity in concrete	398	260
PHE 20	Same as above — except var/sp 0-750	418	270
PHD 26	6.3 amp 1" capacity in concrete	495	320
PH 38	7.5 amp 1½" capacity in concrete	549	355

All above complete with cases

SKIL TOOLS

		List	Sale
551	5½" Circ. saw 6.5A	99	73
77	7¼" Worm Saw	240	135
367	6½" Worm Saw	239	135
825	8¼" Worm Saw	270	165
807	7¼" Skilsaw 13A-Super	153	100
808	8¼" Skilsaw 13A-Super	172	110
2016-02	3/8" Cordless Drill complete W/Charger, Case & 2 batteries	199	95

TIPS FROM YOUR SHOP (AND OURS)

Continued from page 17

A TIP GOES "FULL CYCLE"

Ouch! Extended use of a hammer or screwdriver locates hand muscles you never knew you had.

TIP: To cushion your hand from aches and blisters, wear bicycling gloves. The padded palm cushions blows. Because the gloves are fingerless, it's still easy to pick up and hold hardware, nails and tools.

— David Williams, Cheraw, S.C.

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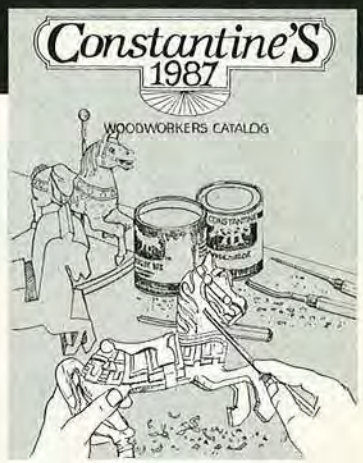
Because wood putty never seems to exactly match the wood, patches stick out like a sore thumb.

TIP: For an exact color match, there's nothing closer than the actual wood. Gather fresh sawdust — the finer the better — from your belt sander or workbench. On waxed paper, stir epoxy cement with the sawdust, fill holes, cracks and mistakes.

— From the *WOOD* shop

WOODWORKER'S CATALOG



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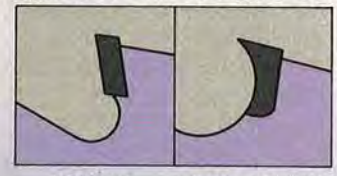

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Also, by sharpening the tooth through an advanced process, Black & Decker has achieved an edge considerably sharper than that of conventional carbide blades.

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PRODUCTS THAT PERFORM

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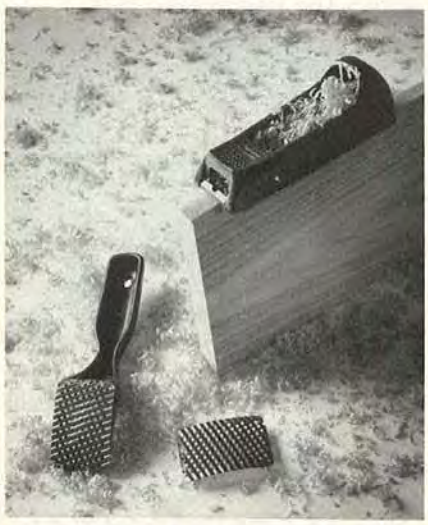
Little shavers



You're probably familiar with Stanley's Surform tools as workhorses that can remove a lot of wood in a hurry. These two little guys are no exception, but they can get into some spots that the big ones can't, including the pocket of your shop apron. Use them to do close, precision work, such as rounding edges, smoothing nicks, and sculpting irregular shapes.

The Stanley Shaver *at left* operates on the pull stroke; the one-piece molded handle gives you positive control over the blade. The curved, clip-on blade allows you to work on inside curves.

The one-handed Stanley Pocket Plane *at right* has a diecast body and comes with a replaceable 5½" flat blade — just the ticket for working short pieces. You also can fit it with a 46- or 80-grit carbide sanding blade (Stanley product nos. 21-339 and 21-443, respectively) to make it a long-lasting sanding block. *Stanley Surform Shaver (product no. 21-115), about $4.00; Stanley Pocket Plane (product no. 21-399), about $5.00. Available in hardware, discount, and department stores nationwide.*

A turn for the better

You'll get hooked on turning with this 24-mm turning hook. Designed for use at slow speeds, this "hook" is actually a gouge with the cutting edge oriented 90° to the length of the tool. The hook works best on green wood, and — with a little practice — you can use it to remove large areas of wood quickly. *Turning Hook (no. 71N03.02), $37.55 postpaid. We ordered ours from Garrett Wade Co., 161 Avenue of the Americas, Dept. W, New York, NY 10013.*

Continued

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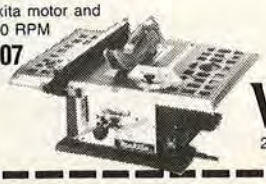

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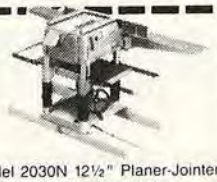

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PRODUCTS THAT PERFORM

Continued from page 21

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Help for homeless bits

If you're always "losing" drill bits, here's the answer: an inexpensive plastic drill stand that will hold 24 bits ranging from 1/16" to 1/2" (by 64ths). To help you sort sizes, the stand includes a heavy-gauge hardened-steel drill index with permanently etched hole sizes (with decimal equivalents). *General Drill Stand (no. 57), about $2.50; Drill Gauge (no. 14), about $7.50. Available in hardware stores nationwide.*

One tough tomato

Having built literally hundreds of cutting boards and finishing them with various types of nontoxic oil finishes — cooking oil, mineral oil, and others — our how-to editor Marlen Kemmet says Behlen's Salad Bowl Finish beats them all.

Oil finishes require constant reapplication to seal the board against stains from meat and vegetable juices. But this one dries to a hard, durable surface that will withstand many months of heavy use before a touch-up coat is needed. A typical cutting board will require two or three initial coats. The moisture-resistant finish also helps keep the board from warping and cracking.

Although this finish contains toxic solvents while in liquid form, it is nontoxic when dry and meets FDA approval for use on objects that come in contact with food. This makes it excellent as a tough, glossy finish on kitchen utensils and kid's toys. *Behlen's Salad Bowl Finish. Write to H. Behlen Bros., Route 30 North, Amsterdam, NY 12010 for list of suppliers in your area. We ordered ours from Wood Finishing Supply Co., Inc., 1267 Mary Drive, Macedon, NY 14502. Cost: $5.74 pint, $9.32 quart, $25.83 gallon. $2.00 shipping and handling charge on all orders.*

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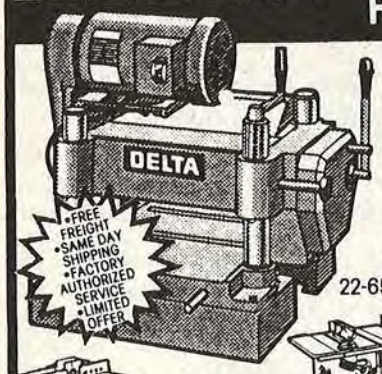

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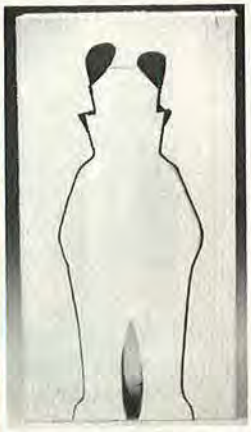
SOUND ADVICE

How to Band Saw A Carving Blank

Print this article

To cut accurately on a band saw, you should always maintain one flat side on your stock so that it rides the table steady and smooth. But that's particularly difficult when you're sawing a carving to shape by following a pattern traced on adjacent sides of the carving block. If you cut the front view side first, you eliminate the flat side of the block you need for support to saw the profile! Some carvers spot-glue it back together, but there's a better way.



Experienced carvers use this technique to maintain solid support on the saw:

Step 1. Start with a piece of block-shaped carving stock on which the two sides not showing the pattern form a 90° angle. The other two sides don't necessarily have to be square.

Step 2. With a ⅛" blade on the band saw, cut along one side of the pattern from bottom to nearly top center, circle in a teardrop shape, and come back down the same line.

Step 3. Repeat the sawing on the other side of the front view, being sure to leave about a ¼" connecting area of the block intact, as shown in the first photograph.

Step 4. Turn the block to the side on which you've traced the profile and saw one half the pattern, as in the second photograph. On your last cut, saw through the connecting wood at top center to free your carving from the block.

You now have an accurately cut-out "rough" to begin your carving.

Photographs: Craig Anderson

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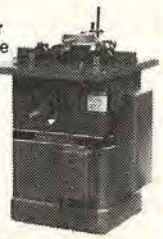

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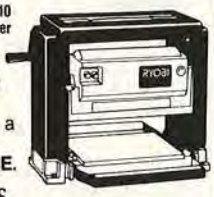

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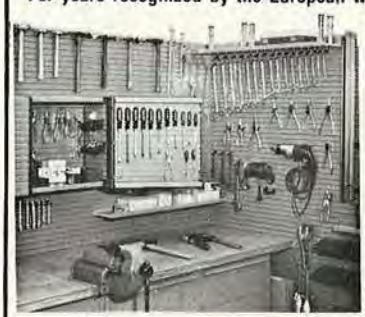

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Holiday Firestarters

Print this article

Stumped when it comes to a quick, inexpensive gift for neighbors and acquaintences? Try brightly wrapped firestarters you make from shop sawdust!

What woodworker doesn't occasionally have mounds of sawdust to dispose of? This practical gift idea puts sawdust to good use.

As their name implies, firestarters get a fireplace fire going, like kindling. They burn long, strong, and bright, and replace the old reliable, wadded up newspaper.

For materials, you'll need:

- white, green, and red tissue paper
- paraffin
- gift ribbon
- sawdust

Quantities, of course, depend on how many firestarters you intend to make. A grocery sack full of sawdust and a pound of paraffin, for instance, will produce three or four dozen.

Before you start assembling your firestarters, heat the paraffin to melting in a saucepan on the stove. Once it's melted, turn down the heat enough to keep it that way. Place a large cookie sheet nearby.

Then, cut the tissue paper into as many 10x10″ squares as you'll need, and keep them handy next to your sawdust.

Ladle about ½ cup of sawdust into the center of each tissue square. Wrap the tissue tightly around the sawdust and twist the ends together, as if you were making a popcorn ball. Tie a piece of ribbon around the twist.

Dip each wrapped ball of sawdust into the melted paraffin for about 30 seconds to saturate it, then set it on the cookie sheet to "dry." This doesn't take long — the paraffin sets up quickly.

A dozen firestarters in mixed colors, assembled in a wicker bun basket, makes an attractive gift to place on the hearth. From then on, you won't have to worry about what to do with shop sawdust!

Illustration: Jim Stevenson

YOU TAKE THE HIGH ROAD

Print this article

Two approaches to Christmas gift making

Woodworkers' methods differ as much as our machines and projects, but we all work for that moment when we can put away the chisels and stains, sit back, and admire our handiwork.

Preparing for this Christmas issue of *WOOD* gave me a good view of two very different approaches to that final moment. Jim Downing, our Design Editor, and I both tackled the same project here in the *WOOD* shop. Although we decided to make the same items, our methods couldn't have differed more. You see, Jim is a perfectionist, which I think shows up in the designs he creates for the magazine. Not me! I'm a production man. Crank them out — one, two, three.

We set out to make the wooden earrings project featured on page 72. I immediately thought of all the ladies who might appreciate a pair of handmade earrings — my wife, my mom, our secretaries, our baby-sitter, and on and on. Jim, on the other hand, decided to make just a couple of pairs for his wife.

I immediately started laminating thin stock and veneers together in long sections; after all, why cut one pair when you can cut 20 or 30? Jim, of course, had to make a few drawings first to see what looked the best on paper. When he finally got started, the size of his lamination didn't leave much room for error.

While I was busy mass-cutting earrings to shape on the bandsaw, as shown in the photo *above*, Jim cut two pairs and spent what seemed to me an excruciatingly long time sanding them to shape by hand. Once done cutting, I gathered my multitude into a small box and headed for the drill press to begin some production sanding. Jim, meanwhile, was dutifully applying the finish. It would take me several more lunch hours to finish all mine.

We both enjoyed making the wooden earrings, and most of all, giving them as gifts. This goes to show, I guess, that it really doesn't matter if you make one or a hundred items; the satisfaction of woodworking is out in the shop and in seeing others delight in our handcrafts.

Produced by Marlen Kemmet
Photographs: Hopkins Associates

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YESTERDAY'S TOOLS

Print this article

THE STANLEY NO. 45
Workhorse of a Simpler Era

Patented in 1884, the Stanley no. 45 was a multipurpose plow and beading plane.

Like most woodworkers, you no doubt have at one time or another admired a fine piece of furniture from the past. If you've ever come across an antique table that had multiple reeds running lengthwise down its legs, you know that no lathe or electric-powered router created them. But what did?

It's highly likely the talented tool that made those reeds was the Stanley no. 45, a hand-powered workhorse from the Industrial Revolution era. This tool is the earliest example of the refined workmanship that makes combination planes admired, collected, and used, even today.

The king of all-purpose metal planes

In that bygone era there was considerable interest in metal planes. The first ones, from Leonard Bailey, made their appearance in 1867. Over the next 25 or 30 years other metal planes — combination planes and multiplanes — made their way into woodworkers' hands. With the patenting of the Stanley no. 45 in 1884, however, the king of all-purpose planes had arrived.

Looking at the Stanley no. 45, you wonder as much about the tool itself as the work it could produce. It's a complex array of screws, wing nuts, rods, and accessories.

You can fit the Stanley no. 45 with as many as 40 different blades or cutters, and use it to plow, rabbet, dado, make beads, tongues and grooves, sashes, hollows, rounds, and moldings — all with equal ease and precision. Combining the cutters for various effects makes your imagination the only limit.

This plane's reputation for precision proves to be well-earned, too. The screw adjustment for advancing the cutter is so precise that it beats the adjustments on today's bench planes for refinement.

An investment in craftsmanship

You can buy modern descendents of the Stanley no. 45, though current reproductions lack the original's nostalgic appeal. Whether antiques — which are relatively easy to find — or reproductions, one of these planes will cost you about $175. You really have to enjoy the slower pace of a past era to use one. But to many woodworkers, that's the charm.

Photograph: David Donnelly

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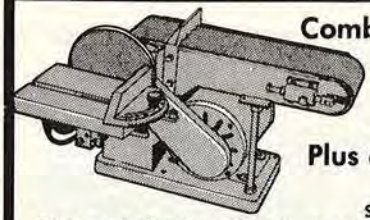

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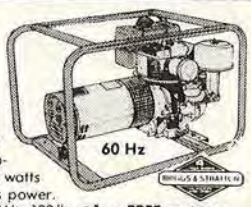

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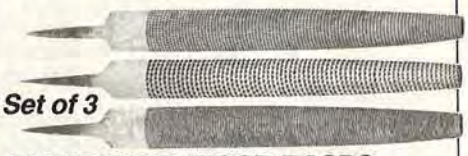

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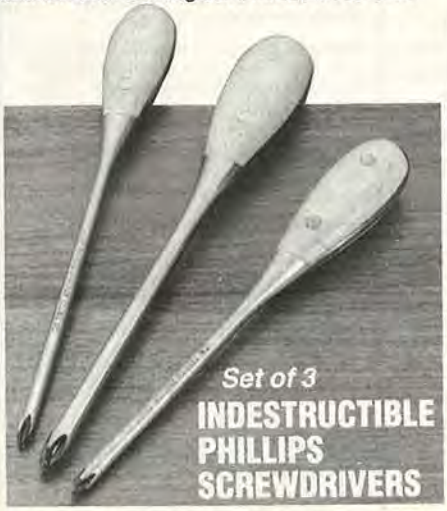

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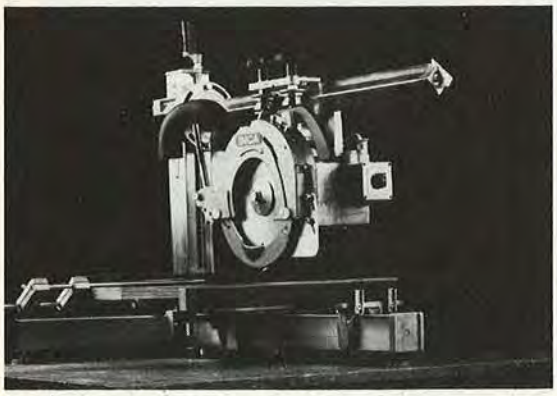

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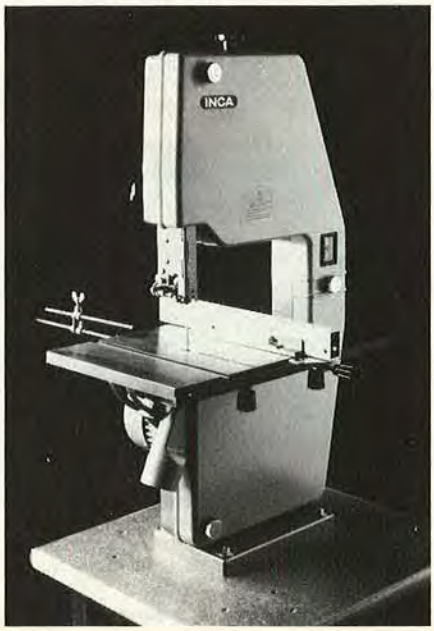


THE MAGAZINE FOR HOME WOODWORKERS
DECEMBER WOOD 1986
Print this article

HOLLY

the snow-white wood of winter

Holly heartwood

Traditionally, decking the halls with boughs of holly marked the beginning of yuletide. The ancient Romans probably started this tradition — they used holly to decorate for *Saturnalia,* their celebration of the winter solstice. Today, the gathering of holly's thick, green, spiky leaves with bright red berries has become a seasonal industry along our southeastern seaboard.

Holly's connotation was not always joyful, however. Before there were laws to prevent such practices, purveyors of live songbirds as pets caught their pretty prey with the help of the holly tree. They mashed its bark to obtain a sticky, gluelike substance called birdlime, which was spread on tree branches. When the precious songsters alighted, they became stuck and were easily captured for market.

More favorably, holly leaves and berries have been touted in folklore as a cure for smallpox, a speedy mender of broken bones, and an all-around lucky charm.

The wood has quite a reputation. As the whitest wood known, holly provides inlay for expensive furniture, the bodies of fine brushes, and even imitation ivory piano keys.

Wood identification

You can find 175 species of holly growing practically around the world, with the largest number in Brazil and Guiana. Thirteen species grow in the U.S. alone, but commercial loggers harvest only the largest of these, *Ilex opaca.*

In a range that extends south from Massachusetts to Florida and west to the Missouri River, holly varies in size from a bush to a tree of 50′ or more in height. Northern winters keep holly small, but it thrives in Arkansas and east Texas. There, holly trees develop a dense, pyramidal shape with many short, horizontal branches. The broad, leatherlike leaves feature sharp prickles — nature's way of fending off animal browsers. By midwinter, red or yellow berries develop on female trees where blossoms once brightly flowered.

The bark of holly tends to be patternless, rough-textured, and medium gray, often with a tinge of olive. Older trees feature wartlike outgrowths.

Weighing in at about 36 lbs. per cubic foot dry, holly rates as moderately heavy and hard, but not strong. With indistinct, fine grain, the wood of holly displays no figure.

Color ranges from an almost pure white sapwood to heartwood with a creamy tone, and the two can be indistinguishable. To prevent a permanent discoloration called "blue stain," loggers cut holly only in the winter months, then process it quickly.

Working properties

Holly's hardness makes it difficult to work with hand tools. It does glue easily, however, and it resists splitting from screws and nails if you use pilot holes. Due to holly's extremely fine grain, it sands to ultimate smoothness.

Holly also accepts stain admirably — so much so that it was once called "dye wood."

Uses in woodworking

You won't find many projects made entirely of holly, but it does make a striking accent when combined with darker woods. In marquetry, holly contributes its natural whiteness, or it can be colored as needed.

Because of its unusually tight grain, holly often becomes the choice of carvers and woodblock engravers. It also turns exceptionally well.

Cost and availability

Holly grows singly rather than in stands, and loggers harvest it along with other hardwoods. In the South, for example, where it reaches a large size, holly can be found mixed in and sold with soft maple, and you might have to find your holly by sorting through a soft-maple pile. Otherwise, holly normally will be available from dealers specializing in hardwoods. You can buy holly veneers from marquetry supply houses. If you live far from its source, holly can cost as much as $5 per board foot.

Photographs: Hopkins Associates
Illustration: Steve Schindler

CABINETS BY HARGIS

Print this article

Clarence Hargis, 82, his son, Melvin, 54, and Melvin's son, David, 25, all pictured *right,* cherish old tools as much as cabinetmaking. In fact, we first met the Hargises at a Mid-West Tool Collectors show. That's when they invited us down to Seminole, Oklahoma, for a visit. What we found, besides a collector's treasure in old tools, was a reputation for quality that goes back over 60 years!

Clarence was born in Paul's Valley, Indian Territory, in 1905. His cabinetmaker father taught him the trade, which at times, even included building coffins. Melvin, the only one of six Hargis children to follow the craft, grew up in the shop. David began at 8 years old, sweeping sawdust. They work side by side daily, practicing skills passed down through generations with pride.

IN OKLAHOMA, FOLKS WHO WANT QUALITY IN THEIR KITCHEN CALL ON A HARGIS HERITAGE – FOUR GENERATIONS STRONG

Seminole, Oklahoma, once boomed with oil, and paychecks filled pockets as fast as drilling rigs filled barrels. If a man set his mind to it, he could make a good life there. He started a family, built a home, and put down roots. When the roots were deep enough, and the finances sound enough, the family bought custom kitchen cabinets by Hargis.

Little has changed today in Seminole. Oil is not as big as it once was, but folks from town and the county, from Tulsa and Oklahoma City, and sometimes even from other states still want Hargis cabinets. That's because down in their shop on West Strothers Street, Clarence, Melvin, and David keep building cabinets the way they've always been built.

The making of a reputation

Clarence's dad bought the present shop in 1924 from an oil company. With a little remodeling, the former theater and dance hall offered plenty of room for cabinets.

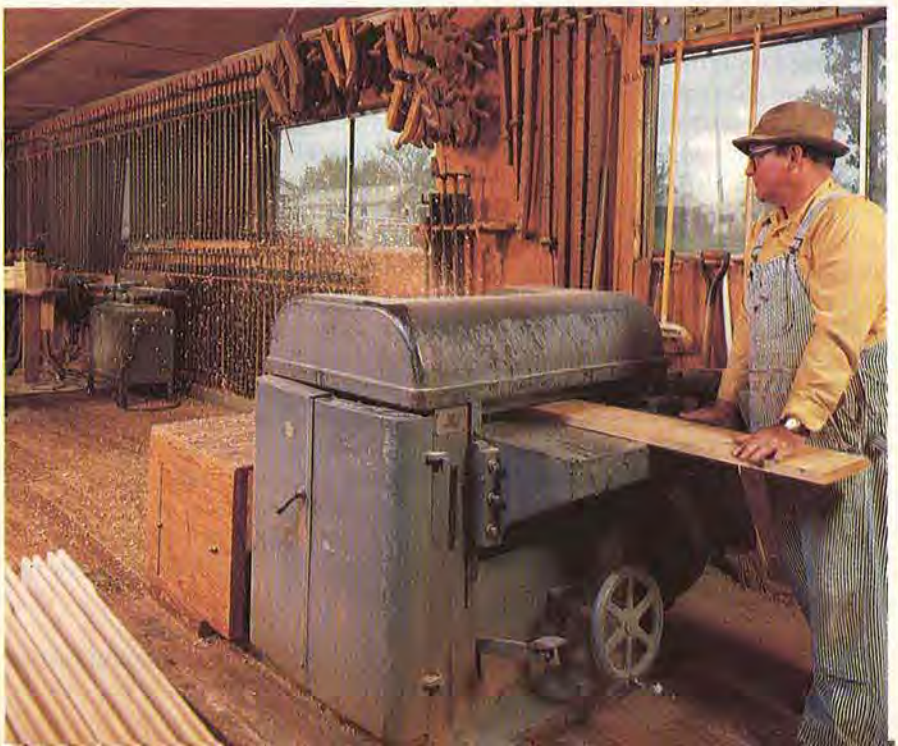
Under his dad's guidance, Clarence learned to make cabinets the Hargis way: mortise-and-tenon joints in the carcass and door frames; frame-and-panel hardwood doors that match front and back; drawer fronts, sides, and bottoms dadoed and joined for strength; and backs as strong and sound as fronts. They took no shortcuts then, and they don't now.

"I used to make tenons for the joints with a handsaw just like that Disston on the wall," recalls Clarence. "For mortises, I had to use a chisel, first cutting into the wood from one way till I was about half done, then turning it around and going at it from the other way. That's because no one can chisel straight down — you always pull toward you and turning it around evens it out."

By hand, it took Clarence and his dad three weeks to make an 8′ bank of cabinets. With power equipment, the Hargises can make 8′ in a day.

Left: **Clear-finished, solid walnut cabinets with raised panel doors carry the "wrinkle" molding at the soffit that marks them as made by Hargis.**

Below: **The Hargises like to work with "fresh" lumber, so they buy it rough and plane it as needed. Melvin can adjust the speed of their 40-year-old Crescent planer.**



From planning to hanging, count on Hargis

From the time a customer calls, the Hargises practically become family. "We try to work with them and their budget," says Melvin, who fields most calls and does what paperwork there is to do. "We can go from flat, hardwood-plywood doors to edge-joined stock with raised panels — anything they want."

Clarence or Melvin, or both, will drop by their customer's house to draw up their needs. Besides the basics, they'll suggest extra storage here or the convenience of a lazy-Susan there (the Hargises had machinists make rotating shafts with ball bearings before ready-made units were available). The units and their dimensions go down on a storyboard of plywood scrap (never paper) so it won't blow around.

Back at the shop, Clarence lays out the project and runs the panels through the saw. The Hargises never keep stock parts on hand, preferring to use "fresh stuff" — either newly purchased hardwood plywood or lumber from the stockpile they plane themselves.

David bores the mortises on a 50-year-old J.D. Wallace mortising machine, and cuts the tenons on a 1940s Crescent tenoning saw. Melvin saws the dadoes and assembles the carcasses and doors. Then, it's up to David and Melvin to sand the assemblies, while Clarence crafts the Hargis cabinet trademark.

Hargis cabinets have always been topped by a special, rococo molding Clarence makes on the shaper. Many would like to add what the Hargises call their "wrinkle" molding to their cabinets, so as to pass them off as Hargis-built, but the technique is a guarded one. "Somebody once asked me how it was done," remarks Clarence. "I told him to mark off the wrinkles on a stick, then wrap sandpaper around a Coke bottle and sand them off.

Continued

Clarence now makes tenons by machine. When he worked for his dad, he cut them with a hand saw.

He came back awhile later and told me 'It's pretty, but sure not worth the trouble!'"

There are quite a few versions of the wrinkle design, yet Clarence makes them all the same way. Each design requires its own 1½" shaper knife, ground to shape by Clarence. Using bump-outs on either side of the shaper's throat to force the 1x2" strip in and out against the blade, he slides the wood along the fence to produce the pattern (see photo, *above right*).

The molding completed, the cabinets await hanging. There's no finishing done in the Hargis cabinet shop: "Too much fuss about government regulations," Melvin bemoans.

It's the Hargis tradition, however, to handle the installation, a job that typically takes three days. They won't trust the job to anyone else.

The Hargises set the base cabinets and screw the wall cabinets to studs *before* they hang the doors. "Then, you can adjust them to a wall that's maybe out of plumb or has any bumps in it," young David comments. "When we get done, the doors hang right."

Last of all, the wrinkle trim goes up. And they recommend a finisher if the buyers can't do it themselves. "It should be a natural finish, no stain," advises Clarence. "You can touch up a natural finish with no

Unlike his granddad, David bores mortises on an old, but reliable mortising machine. Clarence once had to do it all with a chisel.

trouble. Clear lacquer is best; some folks like oil. But you've got to get it done soon as possible, so the wood doesn't pick up grease or fingerprints."

Materials change, value doesn't

Back when Clarence's dad was showing him how to make cabinets, they didn't use plywood because it wasn't available. Now, when the price of lumber would overstretch a buyer's budget, they'll work it into cabinets. "We only use lumber-core plywood," cautions Clarence. "The glue in particle-core messes up the tools."

He runs his hand over a nicely colored piece of red oak, and continues: "If we use lumber, we never join pieces more than 4" wide so the panel won't warp." Over the years, cabinets by Hargis have been available in birch, mahogany, maple, elm, cedar, white oak, red oak, cherry, ash, walnut, and pecan. They've even used cottonwood.

Sure hands, a jig, and a sharp shaper blade produce the Hargises' famed wrinkle molding to top the cabinets.

Clarence remembers, too, when all their lumber was air-dried. Today, they buy kiln-dried wood. "Air-dried is better working, but it really doesn't make any difference in the cabinets."

In the old days, the only kind of glue to use was made of animal hide. You can find a dented and dirtied glue pot in the Hargises' shop. "We still heat up some hide crystals for furniture repair and laying veneer," Melvin points out. "But mostly we use urea formaldehyde. It's real permanent."

In Clarence's eye, there have been lots of changes since he started cabinetmaking — in materials, equipment, and regulations. About the only thing that remains constant is the value of Hargis cabinets.

Any real estate agent around Seminole will tell you matter-of-factly that Hargis cabinets are a major selling point, and add $10,000 to the value of a home, over and above their cost. And some folks have valued their Hargis cabinets so much they wouldn't leave them behind.

"We knew a couple here who we made cabinets for a few years back," explains Clarence as he snuggles his thumbs behind the straps of his bib overalls. "They took them right out of the house and shipped them when they moved to D.C."

CLARENCE'S TOOL COLLECTION
A Labor of Love, a Love of Labor

Clarence's "walk-in" tools blanket his home. On the two shelves above the rolltop desk stand his "White House" planes, which he's preserving for the people of Seminole.

Walls in most homes have pictures breaking up blank expanses. Clarence's living room walls don't have any blank expanses — they're hung with tools, each in its place, from ceiling to floor. Tools also cover the floor, windowsills, and occupy the china cabinet. Ditto for his spare bedroom. Tools, not guests, stay there.

Clarence probably has 1,200 planes in his collection: plain planes and work-of-art planes of ebony, ivory, rosewood, and brass. All in his house. Then there are wooden braces, ancient hammers, and one-of-a-kind tools. Name a tool, and you'll find it at home with Clarence.

Ask him about a specific tool, and you'll hear history. "That takes the bark off like this," he says as he demonstrates with the bark splitter he pulls from the wall. "That was important back in that day and time."

Clarence doesn't collect tools to show them off or make a profit from them. In fact, Clarence *never* sells his tools.

For him, tool collecting is a labor of love born of a love of labor. No matter what he paid, each tool is inherently valuable because of the work it once performed. Each tool is a monument to the labor of days gone by and the craftsman who used it.

Walk-in tools find a home

As Clarence explains it, "some tools just walked in the door." More than one person has brought him a prize from their attics because they know he cares!

A very special part of his collection "walked in" that way. "One Saturday morning, the fellow called me up and said 'Come get these tools,'" relates Clarence. He'd never met the Oklahoma City man, but as a collector, he'd heard of his set of planes. They had belonged to the caller's great-great-great-grandfather, a craftsman who helped rebuild the White House after the War of 1812.

"I told him he had the wrong guy because I didn't have the money to pay him what he'd been offered," Clarence continues. The man went on to say, "The money ain't it. They're yours."

Pressed, Clarence tells more. The man needed a good home for the planes, and he knew Clarence would care for them and keep them together as a set.

Representatives from the Smithsonian museum dropped by to ask Clarence for the tools. He wasn't persuaded. After all, folks in Seminole wouldn't be likely to go by there to see them.

Note: *This spring, Clarence intends to pour the foundation for a museum to house all his tools right next to his shop. By winter, there may be a building. Clarence won't charge admission. And his stories are free.*

TRADITIONAL WOODWORKING WISDOM FROM HARGIS

- ***How to tell when the surface of something you're turning between centers is smooth:*** Lay the steel back side of your turning tool on the spinning wood. It'll ride smooth when the wood is.
- ***On keeping veneers from cupping:*** Put glue on your substrate, then damp-rag the top side of the veneer before laying it down. Water in the glue swells the bottom; water on top equalizes the moisture so it won't cup.
- ***Joining the edges of porous wood:*** Apply glue evenly to all edges and let dry. Then, coat with more glue and join. Wood absorbs the first coat and seals it so coat number two does the "sticking."
- ***Preventing cracks in panels:*** Oozing glue from frame corners can get onto panel edges in frame and panel construction so that the panels won't move when they contract or swell. The result: cracks. Rub on paraffin wax along the panel edges first, then they won't join and can move freely.
- ***Sawing a straight line with a hand saw:*** When the reflection of the board on the side of the saw makes a 90° angle with the saw teeth, you'll be cutting straight.

AND SOME "DO'S" FROM EXPERIENCE

Do always test boards for moisture of recommended 11 percent or below. One project gone awry makes a moisture meter sound real inexpensive.

Do use only garnet sandpaper.

Do use a good urea-formaldehyde resin glue for cabinets. Heat it like beans — hot but not boiling. Try the Hargis endurance test: after 10 days in a bucket of water, the joint should still hold.

Produced by Peter J. Stephano
with Emily Freeman Pinkston
Photographs: Bob Hawks

Print this article

FACEPLATE TURNING

AN ENJOYABLE TECHNIQUE THAT OFFERS REWARDS (AND CHALLENGES) AT EVERY TURN

It won't take long; we promise you that! Some people get hooked on faceplate turning the very first time they see a beautifully crafted bowl quickly take shape under the skillful handling of their turning tools. For others, the clincher comes when they experience the thrill of giving a one-of-a-kind project to someone as a gift.

And you know something? We've yet to meet a woodturner who can find enough time to do all the faceplate work he'd like to do. That says something. If you haven't had the pleasure of spending some time with turning tool in hand, you don't know what you're missing. There's no time like the present to develop this great new habit.

Note: *This is the second in our series of technique articles on basic woodturning. Refer to* WOOD *August, 1985, Issue 6, pages 35-39, for more information on turning between centers. In that same issue, beginning on page 68, we also presented a 5-page article on lathe buymanship. And for those of you who need to know more about lathe tools, we've included a three-page article in this issue (pages 58-60).*

TOOLS OF THE FACEPLATE TURNING TRADE

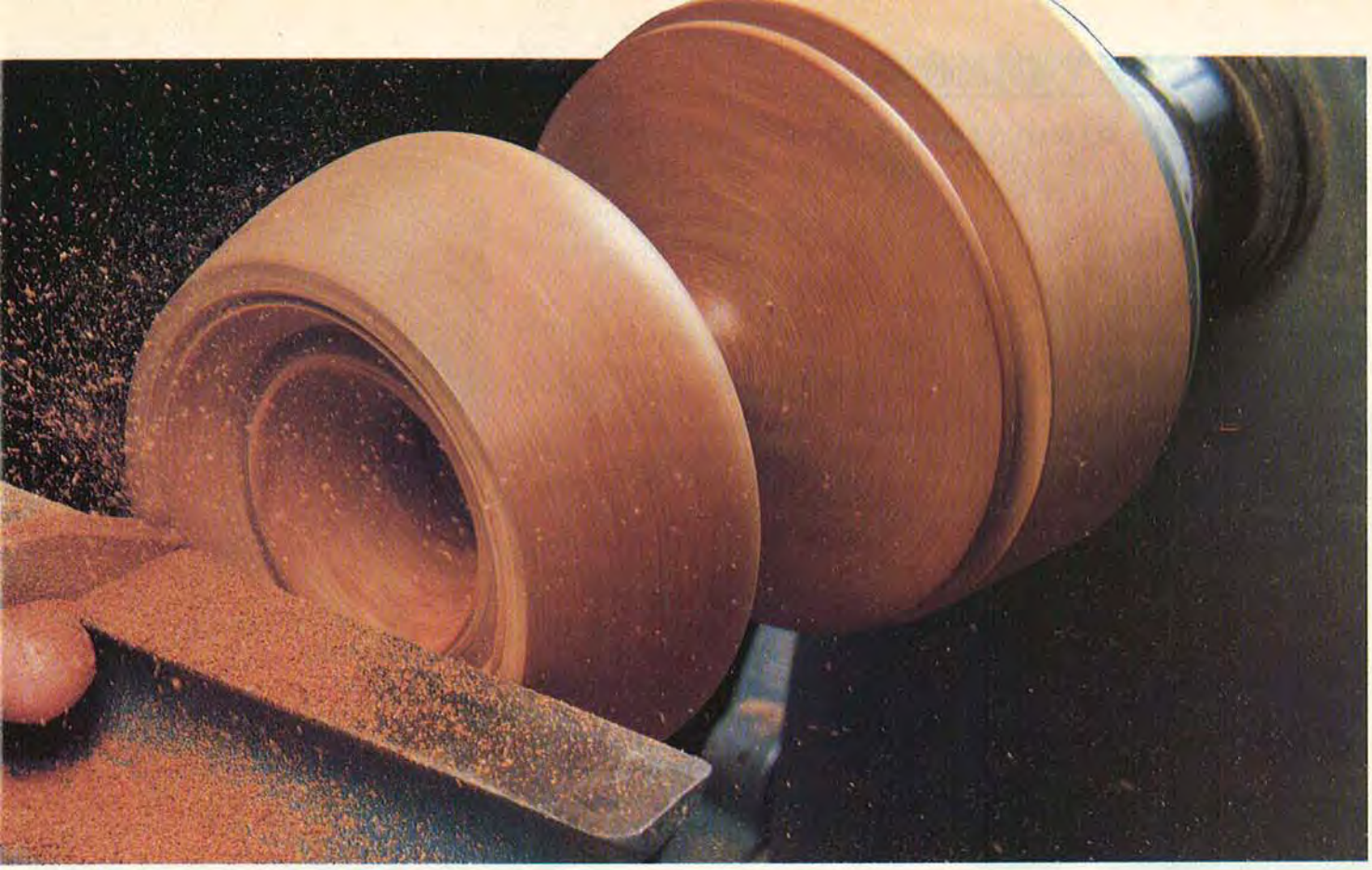
No matter what the technique, things always go more smoothly when you have the right tool. And faceplate work is no exception. You could easily spend several hundred dollars laying in all the "right" tools, but we show a set of six in the photo *at right,* that will get you off to a good start.

You should have three *gouges* — two *spindle gouges* (a ¾" one and a ½" version) and a *bowl gouge.* The spindle gouges make quick work of rounding down the project as well as shaping the outside of it. The flute of the bowl gouge is much deeper than the relatively shallow spindle gouges. This shape allows you to remove material from the inside of a project without the tool's edges catching and tearing the wood.

You'll also need a *parting tool,* a *round-nose scraper,* and a *skew* in your arsenal. We've found the parting tool quite helpful for truing up the face of blanks, roughing out the inside of end grain projects, and in its normal role of parting projects from the lathe. The round-nose comes in handy in a variety of situations, and we use the skew primarily for flattening the inside bottom of bowls and other flat-bottomed projects.

With a *compass* you can find the approximate center of a blank and establish the largest diameter of the project. And a pair of *outside calipers* allows you to check on the progress of your turning from time to time.

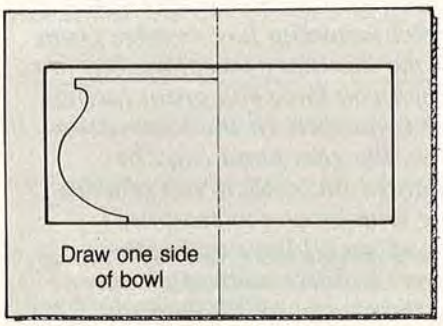
Sandpaper (80-, 120-, 150-, and 220-grit), a *face shield* to protect against flying shavings and dust, and a *dust mask* and *respirator* (not shown) for use while sanding and applying finishes round out the collection of necessities. Note the felt fabric beneath the sandpaper. We use it between the sandpaper and our fingers while sanding to prevent getting burned by the heat that results from the friction. Felt also allows the sandpaper to "fit" the contours of the turned shape.



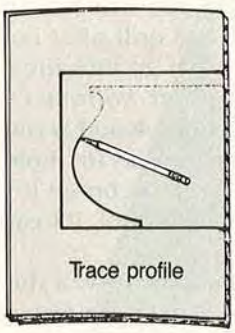
LAYING OUT YOUR PROJECT

Most of us need to visualize the end product before we begin turning to ensure successful results. Here's our four-step strategy for deciding on the shape of the project and then transferring that shape to a template.

Step 1: On a piece of tracing paper, draw a full-sized side view of the turning stock. Then, draw a perpendicular centerline through the side view. Now draw a trial shape on one side of the center line. If you don't like what you see, erase and repeat the procedure until you arrive at a pleasing shape. Allow space on all sides for getting the stock into round.

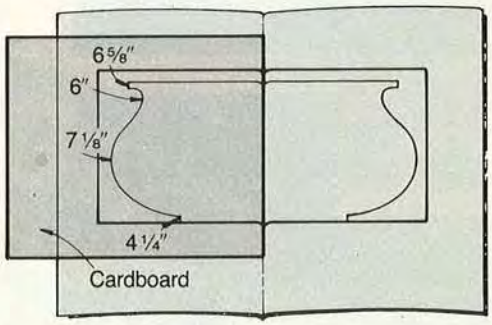


Step 2: Fold the tracing paper on the centerline, and then trace the profile onto the other side of the line. Doing this will yield a symmetrical shape.

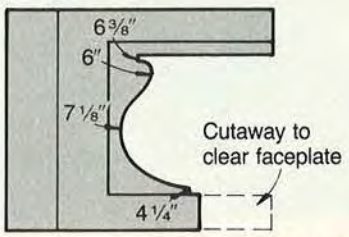


Step 3: Unfold the tracing paper to view your handiwork. (We usually end up repeating the above process several times before we're satisfied.) Select the design that suits you best, then measure and mark the project's diameter at several high and low spots on your design. Doing this allows you to easily check your progress with calipers as you shape the project.

To make your template, glue card stock onto the back side of the tracing paper up to the centerline as shown.



Step 4: Finally, cut away the right-hand portion of the tracing paper pattern and cut out the project's profile.



Continued

TWO GOOD WAYS TO MOUNT STOCK ON A LATHE

Rather than confuse you by reciting the many ways to prepare the stock for turning, we've decided to show you two easy options, neither of which requires a commercial chuck. For more information about various chuck options, see our article on page 103.

The Direct Connect Method

To reduce the possibility of the project breaking loose during turning, it's always best to secure the faceplate directly to the stock. Whether you can go this route, though, depends on whether or not there is enough extra material to accommodate the screws that must be driven into the stock.

Assuming that you do have sufficient material, start by finding the center of the blank by drawing diagonals from corner to corner at each end of the stock. Then, mark the largest diameter needed for the project with a compass as shown in the photo *at left, top*.

Now, plane or cut off the excess material at each corner of the blank. Doing this not only speeds the rounding-down process, but also, by removing off-center material, prevents the severe pounding a gouge takes when it repeatedly meets unfaceted corners. Swinging large amounts of off-center material exerts additional pressure on the bearings of your lathe, too. And when the bearings wear, the headstock typically exhibits some movement (or play), making it difficult for you to do quality work.

Center the faceplate over the center point that will face the headstock, and drill pilot holes for the screws that go into the blank see photo *at left, bottom*. (We use 1" flathead brass wood screws as large in diameter as the holes in the faceplate. Why brass? If you hit one with a lathe tool, it's easier on the tool.)

Once you have driven the screws home, you can fasten the blank to the lathe.

The Auxiliary Faceplate Method

When you just don't have enough material to allow you to screw the faceplate directly to the blank, you'll have to fashion an auxiliary faceplate and glue the stock to it. If you're working with a rough bowl blank, first smooth the surface that will contact the faceplate with a hand plane or a belt sander. This will ensure adequate adhesion between the auxiliary faceplate and the blank.

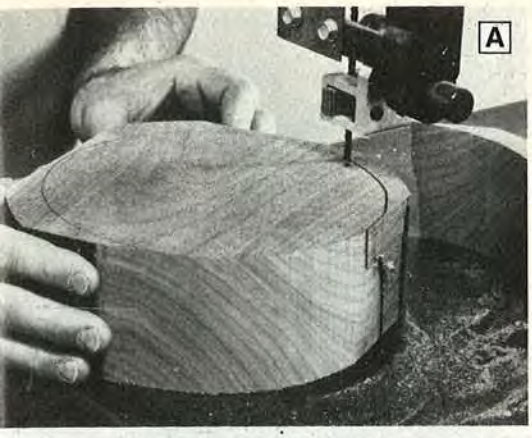
On the surface that will face the tailstock of the lathe (generally the open end of a project), mark the center point of the blank with a compass and scribe the largest desired diameter. Then, cut away the excess material, using the circumference line as a guide as shown in photo A. Doing this gets rid of most off-center material before you mount the turning.

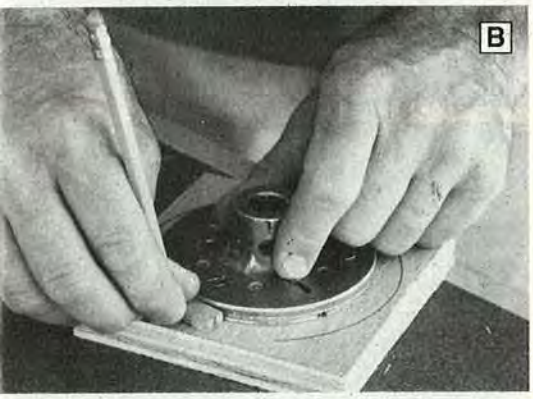
To make your auxiliary faceplate (it should be a bit larger than the base of the finished turning), start by screwing the faceplate to a plywood or solid-wood scrap. Then, with a scrap of the correct size, scribe the circumference of the auxiliary faceplate as shown in photo B. This automatically centers the faceplate on the auxiliary one.

Cut the excess material from the auxiliary faceplate, then screw the faceplate to the headstock of the lathe. Next, apply glue to the auxiliary faceplate as shown in photo C, and adhere a piece of scrap notebook paper to it. This paper makes separating the finished project from the faceplate a snap.

Apply glue to the paper, move the tailstock up close to the headstock, and with the center point of the blank in contact with the tailstock center, move the blank into contact with the auxiliary faceplate. "Clamp" the stock to the faceplate as shown in photo D. This procedure self-centers the blank, which in turn, decreases off-center weight.

Note: *This method works well when fastening face or edge grain to the auxiliary faceplate, but not when you have end grain facing the headstock. In the latter situation, the glue bond can't be counted on. Also, if you're working with green (unseasoned) wood, you'll have to use the direct-connect method or one of the chucks on the market.*





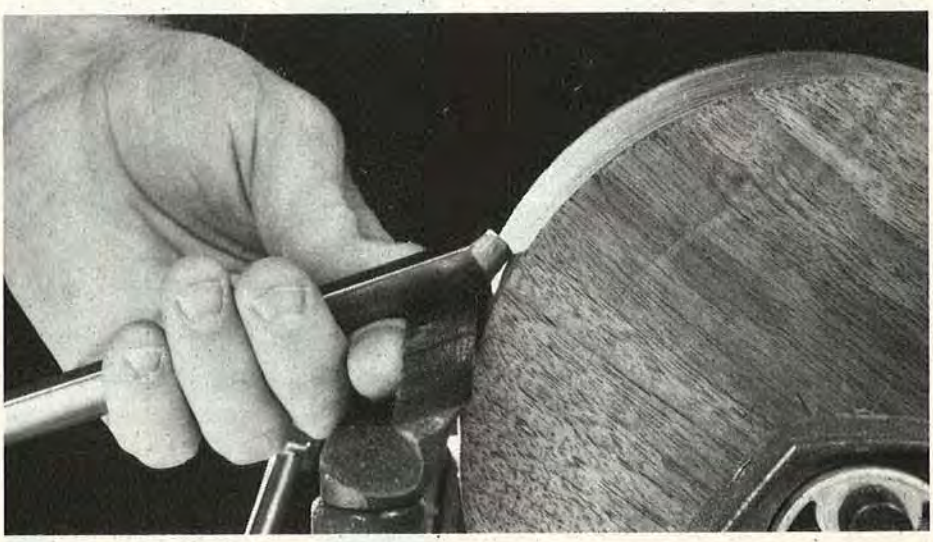
SHAPING THE PROJECT

While no two faceplate turnings ever turn out the same way, they all begin with the rounding-down process. You do this to transform your out-of-round stock to a piece that's concentric to the drive shaft, which takes the stress off the machine. For the same reason, and for safety's sake, we've found it good practice to support the turning at both the head- and tailstock ends until we've completely shaped the outside of the project.

In the photo immediately *below*, we've attempted to point out several things about rounding-down. First, notice the position of the tool rest. You want it as close to the blank as possible without actually touching it. Also note that it's a bit above the center of the project, though this can vary with the bevel angle of the tool you're using. And finally, take a look at the angle of the cutting edge to the blank. In actual practice, you position the bevel flat against the spinning stock, then raise the heel slightly so the cutting edge can do its job.

After rounding-down the blank, which we do at slow speed (400-600 rpm), true up the face of the project as shown in the photo *at the bottom of the page*. We have had good results attacking the face from the side and pushing straight across the face with a parting tool.

If you've had lots of experience turning projects, you can probably pull out your gouge and begin shaping the outside of the project, only occasionally referring to your template for direction. But we've



Continued

found it helpful to lay the template on the blank as shown in photo A, and transfer the marks on the template to the blank. Then we turn on the lathe (at medium speed 800-1,000 rpm), and use the parting tool to remove material at those points to the desired diameter. You'll want to check your progress occasionally with a pair of outside calipers as shown in photo B. These incisions serve as reference points as you continue to shape the project.

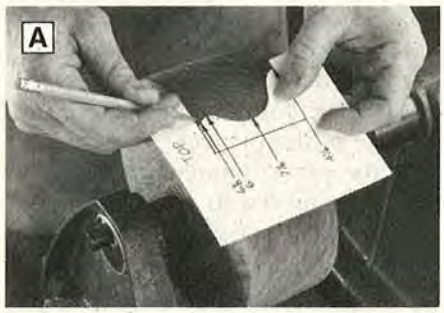
As your project begins to take shape, check it often with the template as shown in photo C. Hold the template perpendicular to the turning, and make marks at all points where the template and the blank make contact. Remove excess material where marked; don't do anything to areas you can see daylight between.

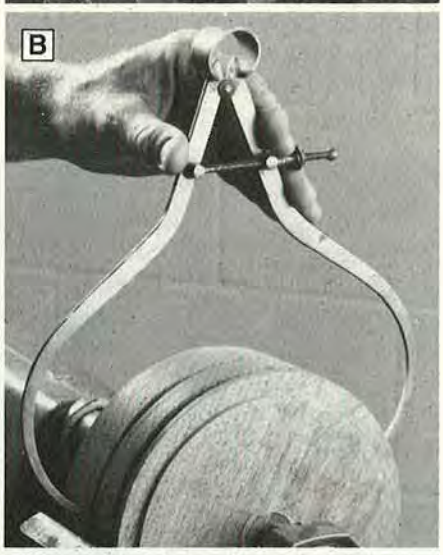
You can do most of the shaping work with the gouges, with some help from the bullnose and the parting tool. When you're satisfied with the outside shape, you may want to sand the project smooth. We go this route because the project still has full support at this point. We sand with a progression of garnet papers — 80-, 120-, 150-, and 220-grit. Be sure to wear a dust mask or respirator while sanding, and keep the paper moving.

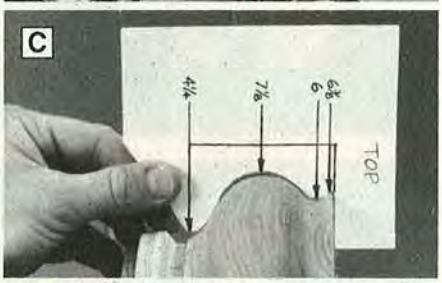
Shaping the inside of the project calls for a different set of tools and a few new procedures. Before hollowing out the project on the lathe, we remove the work from the headstock and drill a 1″ hole in its center to the approximate depth we want the project's bottom to be. Use a drill-press setup like the one shown in photo D. This hole not only serves as a reference point, but also seems to make the roughing-out process easier.

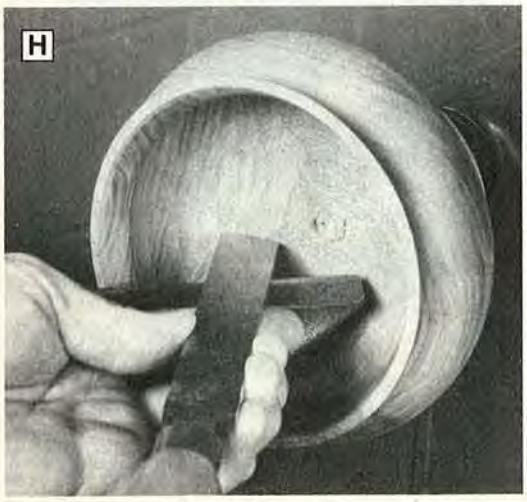
How you rough out the inside of the project depends on whether it's a face grain project or an end grain one. With the former, we use the deep-fluted bowl gouge as shown in photo E. Notice that we work from the outside toward the center of the project. Note also the position of the gouge. It starts out on edge (with the toe doing the cutting), then as you work inward, you slowly rotate the gouge to a more horizontal position. It may take a while to get the feel.

With end-grain projects, we rough out with a parting tool, again









working toward the center hole — see photo F. Note that we're working at a slight angle to the workpiece.

The nearer you get to the outside edge of the project, the greater the tendency for the tool to want to "jump" to the outside. This could require reshaping the lip, so we make starter cuts as shown in photo G with a parting tool. This forms a ledge against which you can start the gouge.

You also can use the parting tool to establish the wall thickness. The wall thickness of bowls, goblets, and other projects should remain constant (we usually shoot for ¼" as a minimum). Periodically check your progress with the calipers.

To flatten the inside bottom of projects, we go with a skew or a roundnose. We "redesigned" the skew shown in photo H, rounding its cutting profile so that it won't catch the wood at the point where the walls and bottom meet.

Note: *As you work the inside of your project, you may find it helpful to have a light source trained on the area being worked. Otherwise, the dust and shavings can quickly obstruct your vision.*

FINISHING UP THE PROJECT

One of the things most woodworkers like about lathe work is that they can rough out, shape, and finish a project while it's still on the lathe. We usually spend plenty of time sanding the project inside and out before finishing; when we hurry we regret it.

While sanding the project, you may notice some impossible-to-eradicate rough areas on the surface. If this happens, you may be time and effort ahead if you backtrack and very carefully cut away a bit more material, then resand. A properly sanded surface should almost shine.

When applying the finish, be sure you first protect the lathe bed and all nearby surroundings with newspapers. Otherwise, the spinning object can quickly make a mess of your shop.

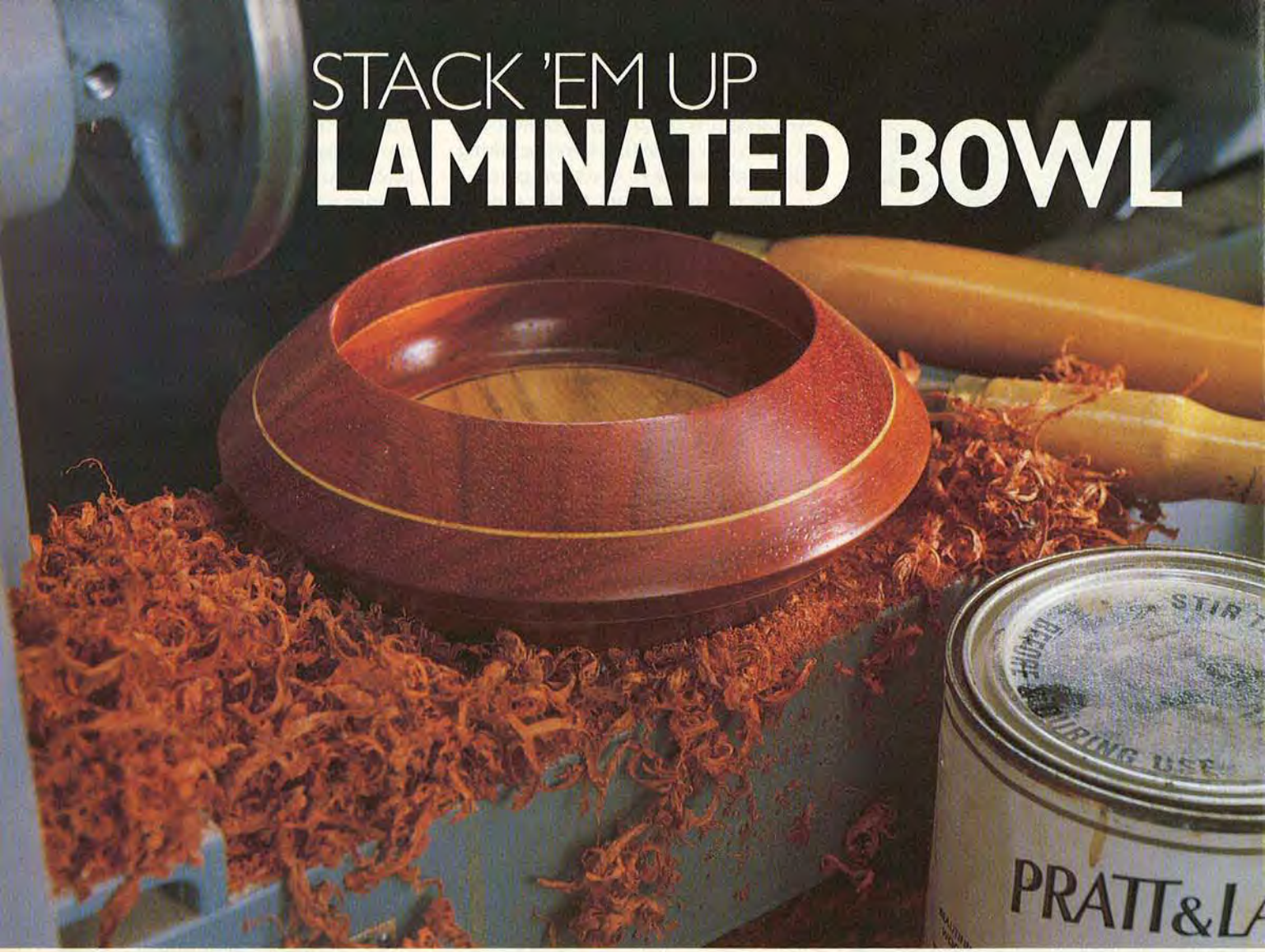
In the two photos *below,* we show you how to separate the finished project from the lathe. If you employed the auxiliary faceplate method, first remove the faceplate from the auxiliary one. Then carefully tap a wood chisel, with the beveled edge facing the auxiliary faceplate, into the paper joint line separating the project from the auxiliary faceplate until the bowl falls away. Then, sand the bottom smooth, and finish.

For those projects turned using the direct-connect mounting method, use your parting tool, with the lathe going at low speed (400-600 rpm) to separate the project from the remainder of the stock. Be sure to hold one hand beneath the project so you can catch it when the separation is complete.

If desired, you can sand and finish the bowl's bottom, and maybe carve your initials there, too.

Produced with James R. Downing and James E. Boelling
Written by Larry Clayton
Photographs: Bob Calmer

STACK 'EM UP
LAMINATED BOWL



Very often in woodworking, it's the little touches that set apart certain projects from the rest. Here, we laminated squares of African padauk and oak veneer to make this simple bowl, one that will stand out no matter where you display it. For more information about faceplate turning technique, see the previous article.

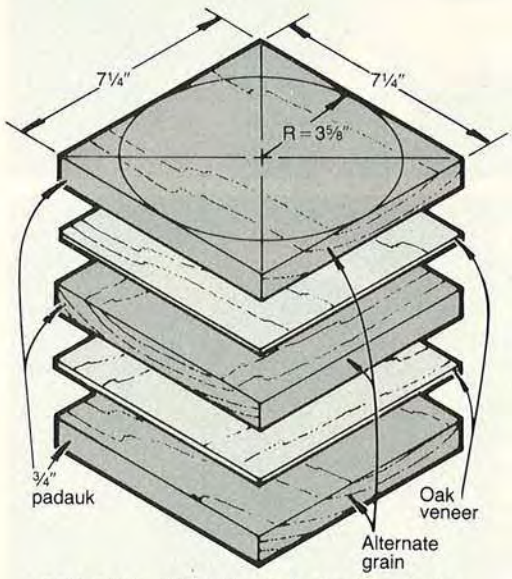
Print this article

FORMING THE STACK LAMINATION

1 Cut three pieces of ¾" padauk and two pieces of oak veneer to 7¼x7¼".

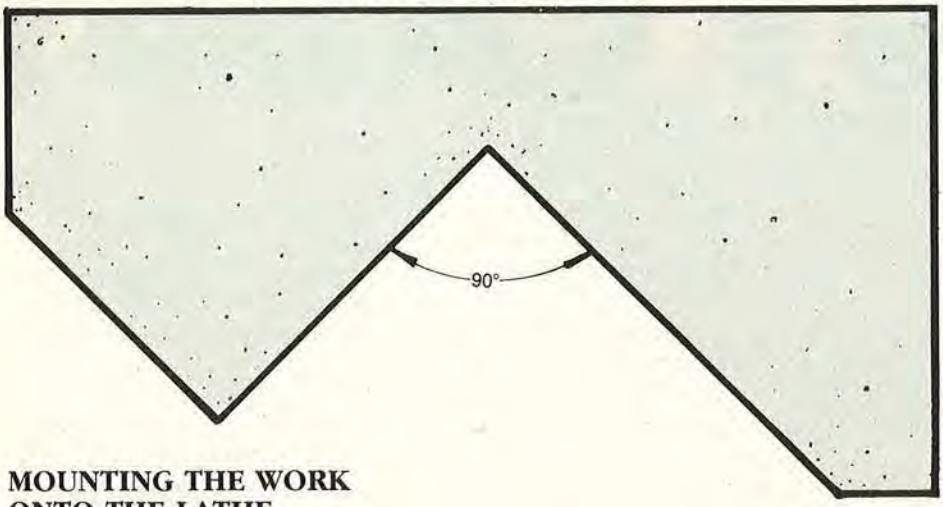
2 Stack the pieces as shown in the drawing at *right* (be sure to alternate the grain of the three padauk pieces). Spread a thin, even coat of glue on all mating surfaces (we used a playing card to spread the glue out). With the edges of the pieces flush, clamp them together with several handscrews. Wait for the glue to dry, and remove the handscrews.

3 Draw diagonals from corner to corner to find its center. Using a compass, mark a 3⅝" radius on the lamination, and cut the piece to shape with a band saw, cutting on the *outside* of the marked circle.

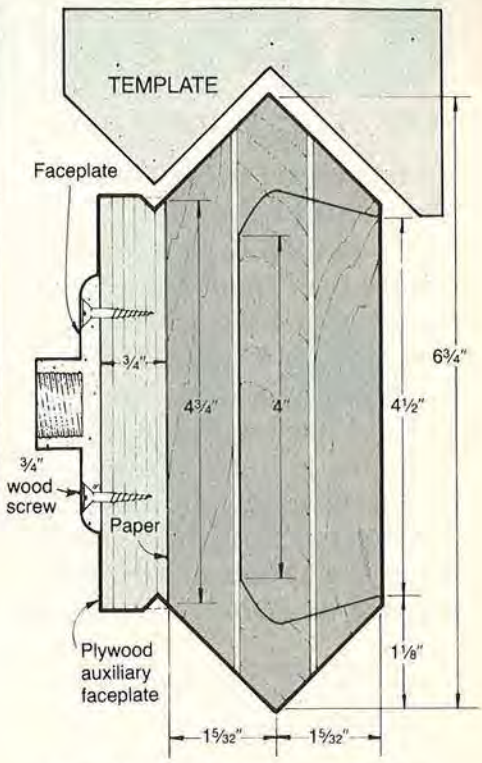


STACK LAMINATION SEQUENCE

FULL-SIZED TEMPLATE



SIDE SECTION



MOUNTING THE WORK ONTO THE LATHE

1 Screw a piece of scrap ¾" plywood that's at least 6" square to your faceplate. Now, using another scrap piece of wood cut to the correct size, scribe the circumference (4¾") of the finished bowl base on the headstock side of the plywood (refer to photo B and the description on page 40 of the techniques article for details about how to do this).

2 Unscrew the plywood faceplate from the headstock. Cut around the marked perimeter of the plywood. Mount the faceplate assembly back to your lathe.

3 Spread an even coat of glue on the exposed face of the plywood mounted on the faceplate. Quickly place a piece of paper on it. Now, before the glue sets, spread another even coat of glue on the exposed face of the paper. Position the tailstock center against the marked center on the top face of the lamination. Then, slide the tailstock/lamination firmly against the faceplate assembly. Lock the tailstock to the lathe bed; then tighten the tailstock spindle to "clamp" the lamination against the faceplace. Let the glue dry overnight.

FIRST THE OUTSIDE, THEN THE INSIDE

1 Position the tool rest slightly above center and along the outside edge of the laminated blank. Set the lathe at a slow speed (400-600 rpm), use a spindle gouge to remove any "out-of-round" stock. Once you round-down the lamination, vibration will decrease and you can speed up to 800-1,000 rpm and reposition the tool rest.

2 Place a piece of carbon paper and a piece of cardboard under the full-sized template drawing accompanying the Side-Section Drawing *above*. Trace the shape of the template onto the cardboard. Now, cut the template to shape. Shape the outside of the bowl with a skew, stopping periodically to check the shape with the template.

3 To turn the inside, reposition the tool rest across the front of the bowl. Using a bowl gouge, clean out the inside of the bowl, being careful not to make the wall too thin at the top edge. Also make sure you don't cut through the bottom oak veneer layer. (We made extremely shallow cuts when we got close to the oak veneer to ensure that we wouldn't cut through it.)

SANDING AND FINISHING THE BOWL

1 Remove the tool rest, and sand the inside and outside surfaces. (We wrapped sandpaper around a piece of felt and kept moving the sandpaper to prevent burning both the bowl and our fingers. We started with 100-grit, progressed through 150-220 grit and finally 320-grit sandpaper using a lathe speed of about 1,000 rpm).

2 Using a chisel and a mallet, work your way around the perimeter of the bowl, tapping gently at the paper line to wedge the bowl away from the plywood. (We positioned the flat edge of the chisel against the bowl's bottom to prevent denting the padauk.) Be careful not to mar the padauk by driving the chisel too far in, or rocking the chisel back and forth to remove it. The laminated bowl should break cleanly from the plywood at the paper line.

3 Sand the bowl bottom smooth, being careful to keep it perfectly flat (we used a stationary belt sander for this operation).

4 Apply the finish. (To slow the darkening of the padauk, a common frustration with this exotic wood, we used Pratt and Lambert Vitralite UVA Spar Varnish. The ultraviolet absorbers filter out most of the sun's destructive rays.)

Project Design: James R. Downing
Photograph: Bob Calmer

A CLASSY COVERED CANDY CADDY

(SAY THAT THREE TIMES QUICKLY, IF YOU CAN)

We know one thing for sure about this project — it's a lot easier to turn than it is to pronounce. Made from Honduras mahogany, which we vouch for as a wonderful turning wood, this container with lid has enough design elements to make it interesting, and it's useful to boot. For more information about the basics of faceplate turning, see the article on page 38.

Print this article

PREPARING THE STOCK

1 Crosscut a piece of 4x4" mahogany stock to 6" long. Draw diagonal lines on one end to locate the center.

2 Carefully center and mount the marked end of the stock to the faceplate. (We used #10x1" brass flathead wood screws.)

3 Slide the tailstock to the other end of the mahogany stock, and lock it in position. The tailstock helps support the workpiece and reduces vibration when you round-down the square stock.

LET'S START TURNING!

1 With the lathe running at a low speed (400-600 rpm), round-down the mahogany square stock with a spindle gouge.

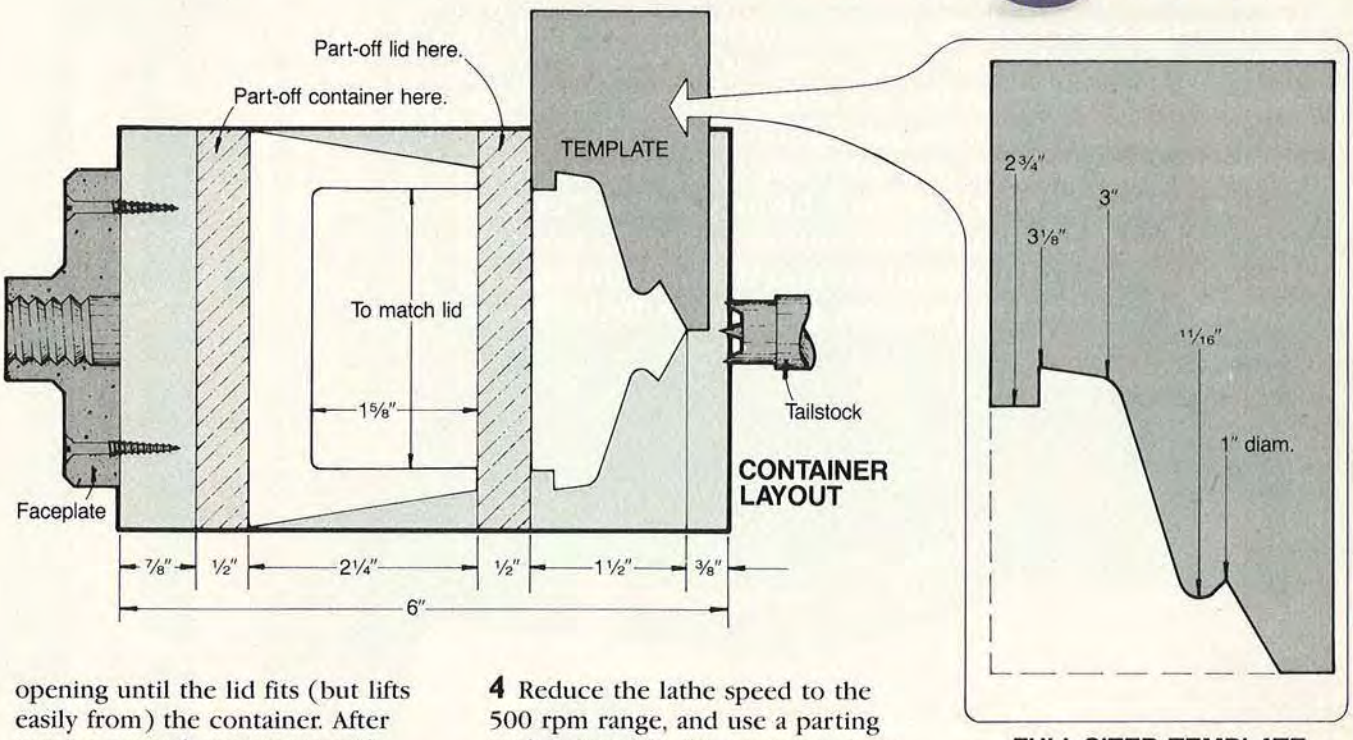
2 Using the Container-Layout Drawing as a guide, lay out the location of the top and bottom points of the container and lid on your workpiece. Make shallow parting cuts at each of these points.

3 Use carbon paper to transfer the full-sized lid template (shown on the opposite page) to a piece of cardboard. Cut the cardboard template to shape. Now, increase the lathe speed to 800-1,000 rpm, and use a small skew chisel, gouge, and parting tool to form the lid and finial. After shaping the lid, slide the tailstock away.

4 Sand the lid exterior smooth. Then, with the lathe speed at about 500 rpm and using a parting tool as shown in the photo *below*, cut the lid apart from the workpiece. Be sure to keep one hand below the lid so you can catch it as it falls free. (Note: We caught ours in our right hand to prevent the lid from spinning off the lathe and getting marred or dented.)

TURNING THE CONTAINER

1 Again using the Container-Layout Drawing as a guide and, a parting tool, cut away all excess material from the top of the container. Then, hollow out the inside of the container, being careful not to go too deep or get the wall thickness too thin. Continually check the fit of the lid against the opening of the container, and turn the opening to within 1/16" of the diameter of the lid's lip. Then, sand the



FULL-SIZED TEMPLATE

opening until the lid fits (but lifts easily from) the container. After turning several containers with lids, you will get such a perfect fit that you can hear and feel a slight vacuum when pulling the lid off.

2 Turn the outside of the container to shape so that the taper of its sidewalls matches that of the lid.

3 Sand the outside of the container smooth at about 1,000 rpm. Turn the lathe off, and do the final sanding *with the grain.*

4 Reduce the lathe speed to the 500 rpm range, and use a parting tool to separate the container from the remaining portion of the mahogany. Finally, sand the bottom of the container smooth and flat to avoid rocking (we sanded ours on a stationary belt sander).

5 Use a tack rag to wipe off any sawdust, and spray or brush on a clear finish. (With the lathe running, we sprayed on several light coats of lacquer, steel-wooling between coats with #0000 steel wool.)

BUYING GUIDE

- **Mahogany turning square.** 4x4x12", $8.75. Constantine, 2050 Eastchester Rd., Bronx, NY 10461. Call 1-800/223-8087 to order (in New York call 212/792-1600).

Project Design: James R. Downing
Photograph: Craig Anderson

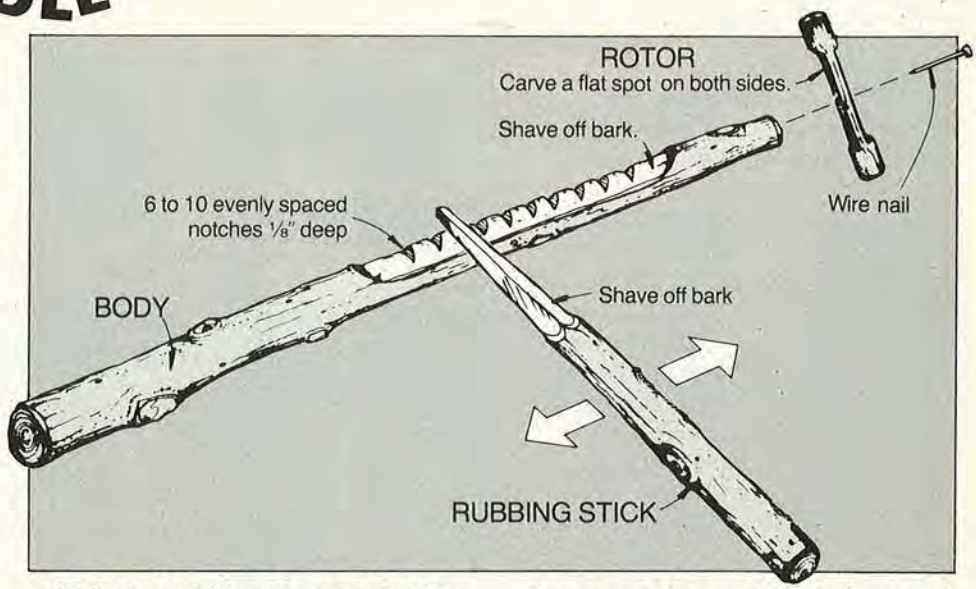
FOLK TOYS

Playthings from America's Past

Like the blue-green ridges of the Appalachians and the wandering valleys of the Great Smokies where many of them originated, folk toys seem as if they've been around forever. Made from common sticks and scrap-wood, make-do fasteners, and minimum finishes, these primitive mechanical marvels have been re-created so many times that much of their history is lost. Yet, folk toys continue to beguile and entertain, just as they did before the turn of the century. You'll find them fun and easy-to-make stocking stuffers, perfect for the holidays.

Spindle Top
see page 84 for details

WHIMMYDIDDLE



Even adults enjoy the mystery of this toy. Rub a stick across its row of notches and the propeller begins spinning — sometimes. An accomplished whimmydiddler will have the prop spinning forward, then backward, and can control speeds from very slow to blurringly fast. Lore has it that this folk toy, also called a hooey stick or gee-haw, is a lie detector. Those who can't make it perform shouldn't be believed!

Since all whimmydiddles we've seen use tree branches, your stock should cost you nothing. Select a green hardwood branch 7-9" long, without a pithy center, for the body. (It's easier to carve green and will harden as it dries.) Make your rubbing stick, about 4" long, from the same material. Use a 3/16"-diameter twig for the 1½"-long rotor.

Space the notches evenly when you carve them. Test the whimmydiddle by rubbing the stick briskly along the notches. If it's slow to respond, carve down the body diameter or deepen the notches.

While the whimmydiddle actually does operate on a complex set of physical principles, the operator does control it, and that's the trick! (One sure way to get it going is to keep your thumbnail lightly rubbing against the body as you run the stick across the notches. Experiment for backward and varying speed.)

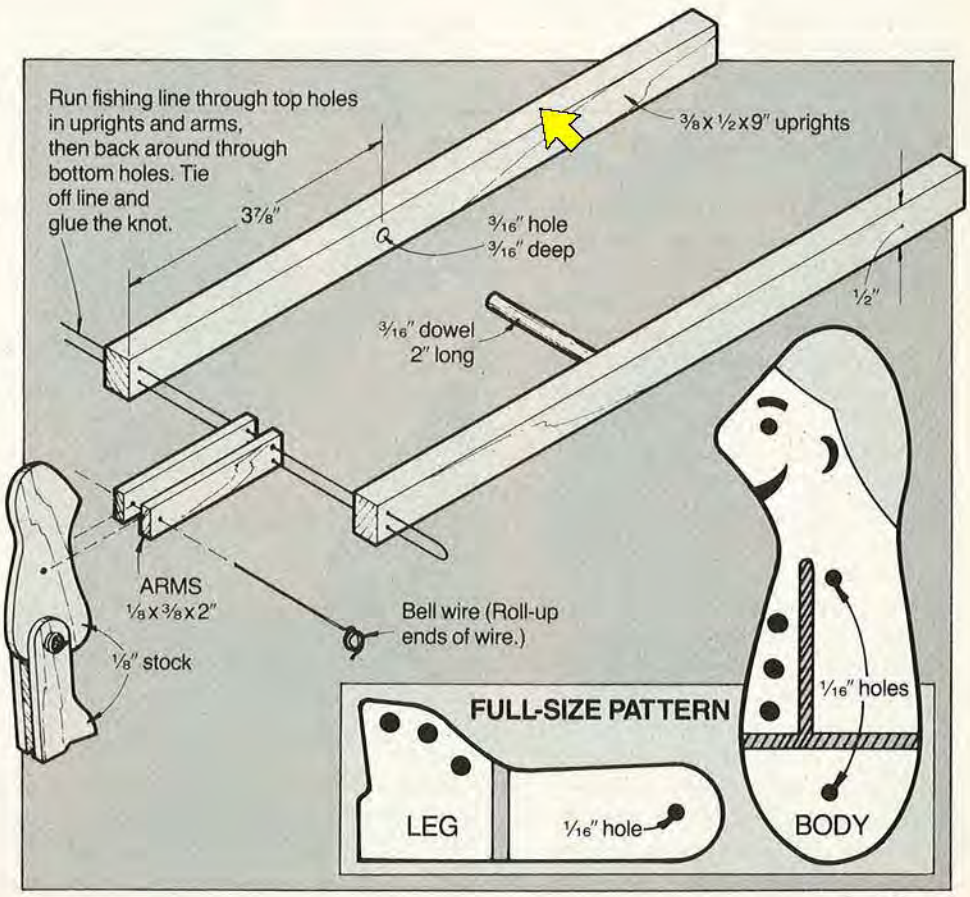
FLAP JACK

The first version of this animated trapeze artist was probably created from the indelible impressions of a high-wire act in a traveling circus. In real life, the daring act lasted but a few minutes, but at home the man of wood could fly through the air with the greatest of ease on a child's whim.

We used yellow poplar for our folk toy, but almost any scrapwood will do, as long as it doesn't split easily. Use a heavy, braided nylon fishing line of about 20 lbs. test to string the arms and uprights together; coated bell wire joins the arms and body.

Paint as much, or as little, detail on the trapeze artist as you wish. Don't worry about a finishing coat — folk toys were traditionally left unfinished after sanding smooth because they weren't expected to last.

Just squeeze the bottoms of Flap Jack's uprights together to make him bounce, twirl, and vault through the air.



Continued

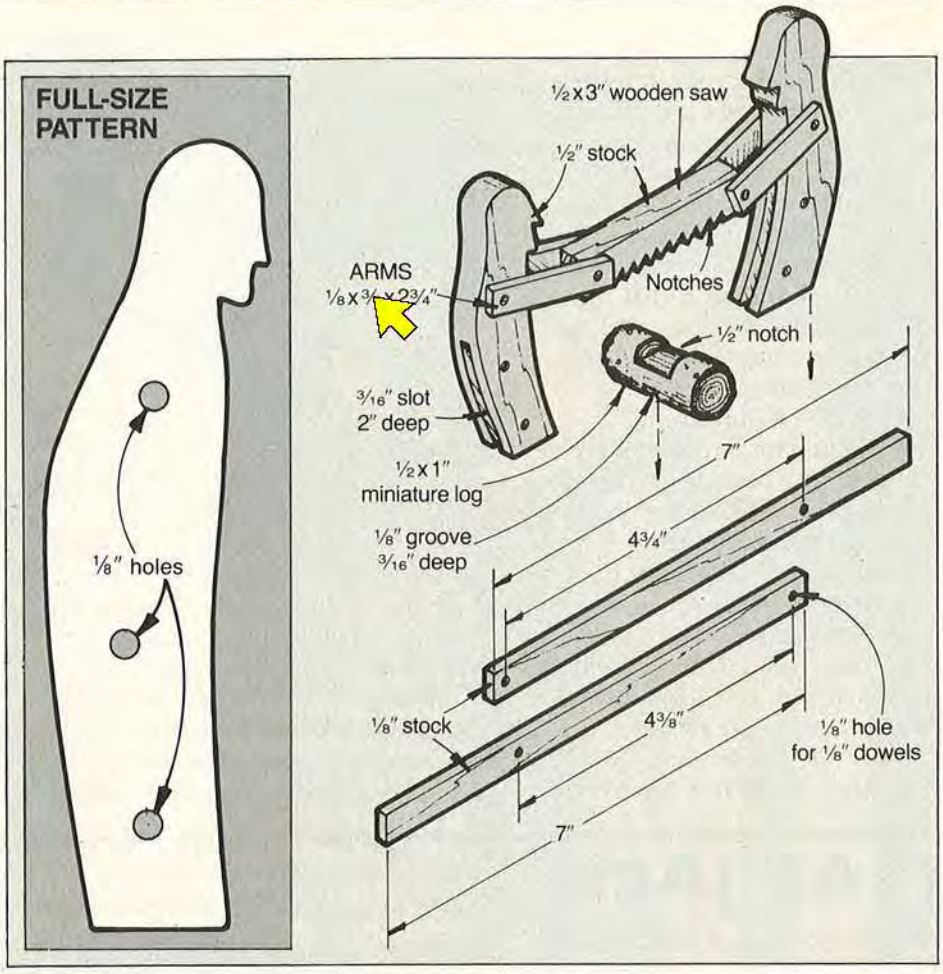
FOLK TOYS

SEE SAW

Many folk toys depict the work, tools, and activities of the adult world, not unlike some of today's toys. See Saw imitates a common rural scene many years before the invention of the chain saw, when the only way to quickly saw up firewood was with a two-man saw. The sawyers here buck (cross-cut) their log as you push and pull on the rails which connect them. But, like a dog chasing its tail, they never seem to get the job done — they're just fun to watch!

Be sure you run the grain of your wood up and down the length of the sawyers' bodies, and with the length of their arms, so it won't split in action. Use glue only to fasten the miniature log, made out of a section of tree branch, to the top rail of ⅛" stock. Friction fit all the ⅛"-diameter hardwood dowels into their holes in the sawyers so that nothing binds during operation.

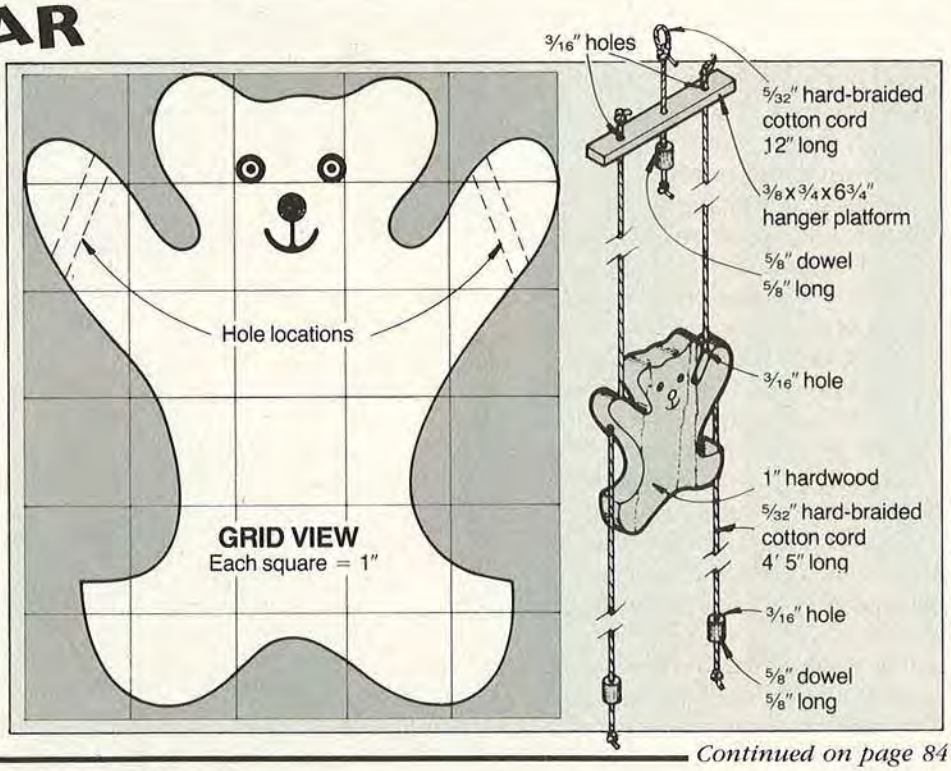
Paint on eyes and other features in bright colors or work clothes, or leave them blank. Plain or painted, the action's the same.



CLIMBING BEAR

Wild bears roamed about freely in our nation's backcountry during the 1800s and were often a cute nuisance to rural settlers. Climbing bear, however, was no doubt made to imitate the trained variety seen at a circus or carnival, which performed all sorts of tricks on command. This bear will climb the cords as you make alternating jerks. When bear reaches the top, let go of the cords and he slides back down.

Make the body of a hardwood such as birch or maple because you'll need its weight to pull bear down after each climb. The cord hanger-loop is meant to be fastened to a wall or other vertical surface. We think bear's cuddly as shown, but you might want to deck him out in jacket and pants.



Continued on page 84

Chickens Pecking
see page 85 for details

All folk toys designed by Dick Schnacke, author and expert on American folk toys, and owner of Mountain Craft Shop, New Martinsville, West Virginia.

POLYMERIZED TUNG OIL

Ever had the feeling that other woodworkers know a thing or two about finishing their projects that you don't? We certainly have! Some projects simply "radiate" quality, and more often than not, it's the finish that attracts your attention.

Bill Lovelace, a woodworker from Phoenix, Arizona, shared some of his finishing wisdom with us, and we think you'll agree with us that the results shown above speak for themselves. Bill finishes his Southwest-inspired stack-laminated bowls with lacquer-type sanding sealer and polymerized tung oil, and he swears that if he can get good results, the rest of us can, too. Here's how he goes about it.

Note: *Not all tung oils have been polymerized. This heating process combines tung oil with selected other ingredients to create a controlled, faster dry rate. This produces a harder, more durable, and more chemically resistant finish than non-polymerized tung oil.*

BRING ON THE ABRASIVES

Bill sells a lot of his bowls, some for as much as $750. And he knows that people willing to plunk down that kind of money for a decorative bowl know the difference between quality workmanship and an inferior product. That's why he spends an hour or more sanding his bowls after turning the project.

While he could do all of the sanding by hand, Bill prefers to speed the process along by running the lathe at medium speed and chucking up a series of flap sanders — coarse, medium, and fine — in a ⅜" reversible drill to sand both the outside and inside of the bowl (see photo A). And to smooth the bottom, he changes to a flexible sanding disk, again using several grits of abrasive (photo B).

For best results, Bill advises that you blow off the dust created by one grit before moving on to the next one. Otherwise, he says, "you end up simply moving the same dust around rather than removing more material."

Lots of woodworkers would be satisfied with the results they'd achieve with the flap sander and sanding disk, but not Bill. He also sands all surfaces by hand with a succession of B-weight garnet abrasives (120-, 150-, 180-, and 220-grit).

SANDING SEALER: THE GREAT TIME-SAVER

Once satisfied that the surface is ready, Bill pops the lid off one of his favorite finishing products, Parks Lacquer-Type Sanding Sealer. Like most woodworkers who have found success with a product, Bill swears by this sealer. "I apply one *thin* coat with the grain with a disposable brush, and I'm always on the lookout for drips; they take lots of elbow grease to remove." (Photo C shows how he applies it.)

Bill doesn't know specifically what's in the product that makes it dry so quickly (usually 30 minutes or less), but he appreciates that characteristic.

After allowing the sealer to dry to the touch, Bill then turns on the lathe (at medium speed) and sands all surfaces with 0000 steel wool (as shown in Photo D). He prefers steel wool over coated abrasives because he feels he has better control with it. Bill advises to apply a good amount of pressure, but "be careful when working around

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corners. It's easy to sand too deeply".

How does this craftsman know when the bowl is ready for the tung oil? "I depend a lot on feel, and also visually check the surface with the bright light. The light makes spotting rough areas pretty easy."

POLYMERIZED TUNG OIL — THE FINISHING TOUCH

The second part of Bill Lovelace's one-two finishing punch is a product called Jasco Tung Oil. (See the Buying Guide for more information on this and the sanding sealer.) Here again, he could go on the road as a promotion man for this product, claiming that, "I've tried several other brands of tung oil, but I like Jasco the best."

What's his secret to success with this product? "Don't follow the directions too closely. Don't rub it in; just lay it on and leave it alone." Rotating the bowl by hand, he applies a *thin* coat of tung oil with an absorbent towel or a lint-free cloth and tries to avoid overlapping the finish (see photo E).

Twenty-four hours after applying the first coat of tung oil, Bill sands all surfaces with 0000 steel wool. "I usually put on four or five thin coats and steel-wool between each. But after the final coat, I don't do anything except allow the finish to dry. It self-levels and dries to a deep luster."

MORE TIPS FROM BILL ON USING POLYMERIZED TUNG OIL

- Make sure the temperature is at least 70° when applying the finish. Lower temperatures slow drying time and make application more difficult. They also may cause the finish to fog.
- Dust can play havoc with this finish because of its lengthy drying time. So make sure, especially on the last coat, that there's not any airborne dust floating around in the shop.
- This same finish also works well on all kinds of projects. "I just finished a grandfather clock with this tung oil, and it turned out beautifully," says Bill.
- If the project loses some of its luster after a time, you can restore the shine with lemon oil.
- To fix mistakes, sand the area with 120-grit abrasive, then apply more sanding sealer and tung oil.

THE LOOKING-GLASS FINISH THAT LASTS AND LASTS

BUYING GUIDE

- ***Parks Lacquer-Type Sanding Sealer.*** Available in quart containers through Ace Hardware and Sherwin-Williams stores. They may have to order it. We paid $5.99 per quart locally.
- ***Jasco Tung Oil.*** Contact Jasco at (415) 968-6005 for availability in your area. Available in pints, quarts, and gallons. Expect to pay about $4.26 per pint, $7.49 a quart.

HELP WANTED: *We sure would like to make contact with more woodworkers like Bill Lovelace, people who are willing to share their finishing secrets with us and with you. If you know of any such woodworkers, please have them drop a line to "In Search of the Perfect Finish," WOOD Magazine, 1716 Locust Street, Des Moines, IA 50336. And don't be bashful if you've got a technique of your own to share! We may visit them — or you — in the shop to do an on-location interview and photo. Thanks for your help!*

Produced by Larry Clayton
Photographs: Reddie Henderson

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PRACTICAL SHOP GEOMETRY

CIRCLE SAVVY, ELLIPSE INSIGHTS, PROPER POLYGONS

Just as important as layout tools and measuring devices is the know-how woodworkers call "shop geometry." Unlike the theoretical problems in mathematics class, the solutions to shop layout problems often determine the success or failure of your woodworking projects. Here, we show you how to find the center of circles, lay out ellipses for ovals, and draw polygons — perplexing problems with surprisingly easy solutions. For fun, work out our methods on paper as you read along.

FINDING THE CENTER OF A CIRCLE

Without a center finder or a compass to help out, finding the center of a circle can be an elusive, trial-and-error task. Learn and practice these two methods, however, and you'll always be on target.

Arcs for Large Circles. Try this procedure, shown opposite, *top,* for even extremely large projects, such as finding the location for the umbrella hole in a big, round picnic table.

Step 1. Draw line *AB* anywhere across the circle and extending past the circumference.

Step 2. Place trammel points where *AB* crosses the circumference at *point A* and swing arc *1*. Then swing arc *2* from *point B.* Draw line *CD* through the points where the arcs intersect. You have now found the centerline of the circle.

Step 3. Find the center by dividing line *CD* in half. Or, double-check by erasing all marks except line *CD*, and swing arc *3* from *point C* and arc *4* from point *D*. Draw line *EF* through the points where these arcs intersect. The center is the intersection of lines *CD* and *EF*.

The 90° Angle for Small Circles

Use a framing square, a piece of scrapwood with at least one square corner, or even a business card, as your "rule" in this technique, shown opposite, *center*. It's perfect for finding the center of round stock.

Step 1. Place the 90° corner of your marking device anywhere on the circle's circumference — *point A* — so that the legs cross the circumference at *points B* and *C.* Put a mark at these points.

Step 2. Connect your two marks with line *BC*, which then denotes the diameter of your circle.

Step 3. Divide line *BC* in half and you have found the center!

LAYING OUT ELLIPSES

You can draw a small ellipse, for the leaves of a drop-leaf table, for instance, by using a framing square and a straightedge of scrapwood, shown opposite, *left.*

Drawing Small Ellipses

Step 1. Draw a line the length of your project as *AB* and mark its midpoint *C.*

Step 2. Draw the perpendicular line *CD* through the midpoint to your project's width.

Step 3. Make a straightedge to use as a kind of compass from a piece of scrapwood longer than half the length of your ellipse. Near one end of the scrapwood, mark *point E,* and drill a hole sized to grip a pencil tightly. From *E,* measure down the wood exactly half the length of your ellipse and mark *point G.* Drive a small nail through the wood at *G* and let the tip protrude. Again from *E*, measure down the scrapwood half the width of your ellipse and mark *point F.* Drive a nail through the wood at *F.*

Step 4. Position a framing square as shown, and lay the scrapwood across it so the nails at *G* and *F* touch the framing square.

Step 5. Swing an arc with your scrapwood "compass" for one-quarter of our ellipse by sliding the nails along the square's edges. Reverse the framing square to draw the other quarter. To draw a complete oval, repeat the drawing steps on the other side of line *AB.*

Make a Pattern for Large Ellipses

You're faced with constructing a large oval tabletop from a 4x8′ sheet of plywood — how do you arrive at the gently curved corner shape? Simple. You make a template that you can use on each corner, as shown opposite, *right.* Here's how it's drawn:

Step 1. Divide the length and width of your stock by two, and draw those measurements as perpendicular lines on pattern paper.

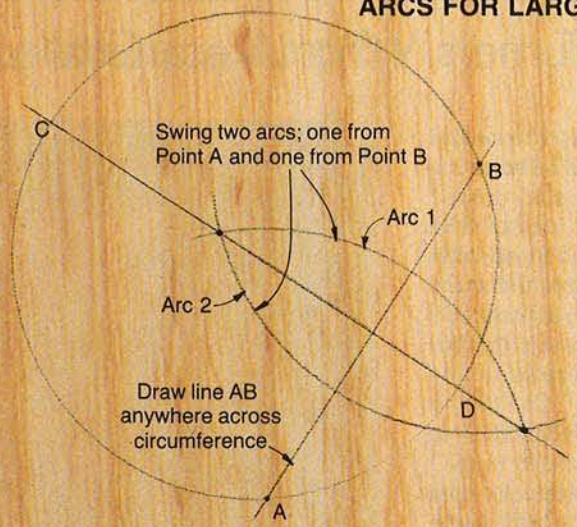
Step 2. Mark any number of equal spaces along the half-length line, then lay out the *same* number of spaces on the half-width line. (Note: Spaces on the half-width line may have to be smaller and closer together than on the half-length line. That's OK, just keep the *number* of spaces equal.) Number all the marks: on the half-length line top to bottom and on the half-width line left to right.

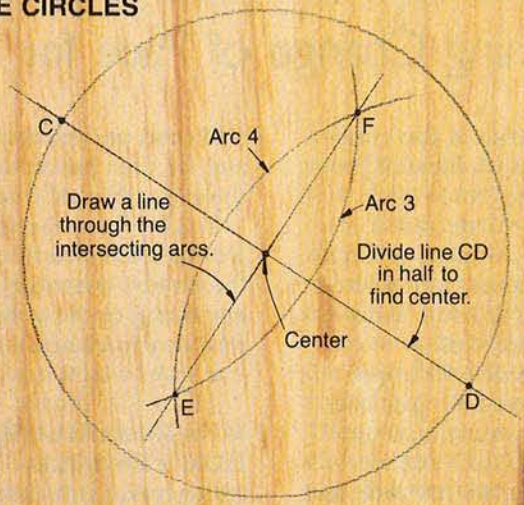
Step 3. Connect all marks with lines in numerical order, that is, 1-1, 2-2, 3-3, 4-4, and so on. You now have an ellipse to fit.

Turn to page 97 to find out how to draw hexagons, octagons, and other polygons.

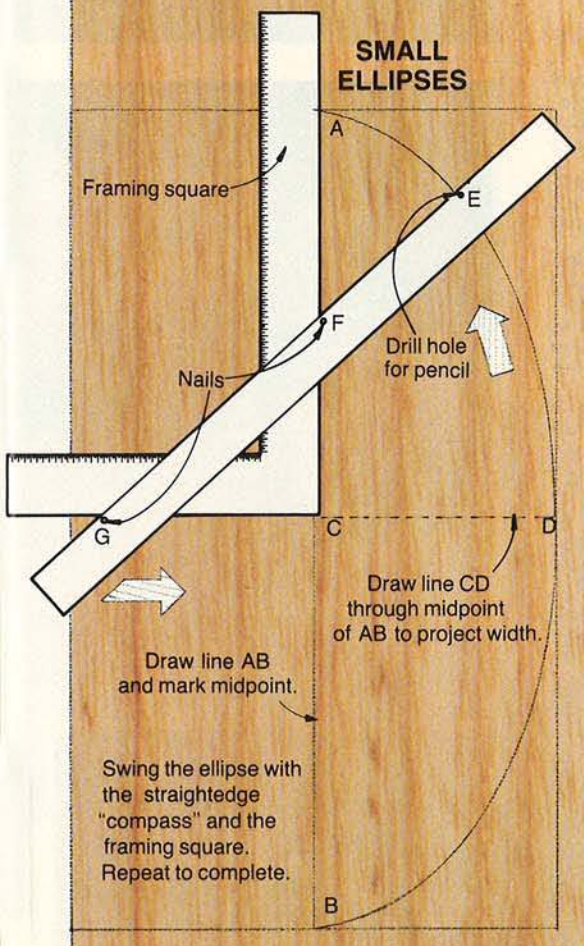
Produced by Peter J. Stephano and James R. Downing with Paul McClure
Illustrations: Bill Zaun

ARCS FOR LARGE CIRCLES

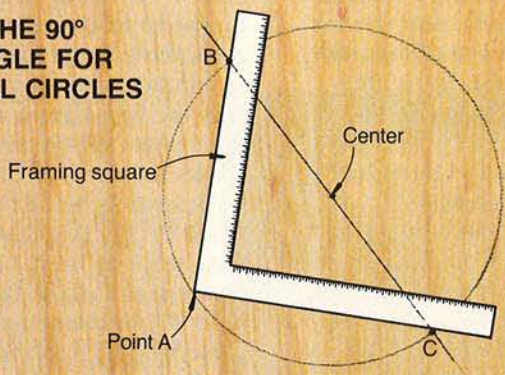




SMALL ELLIPSES

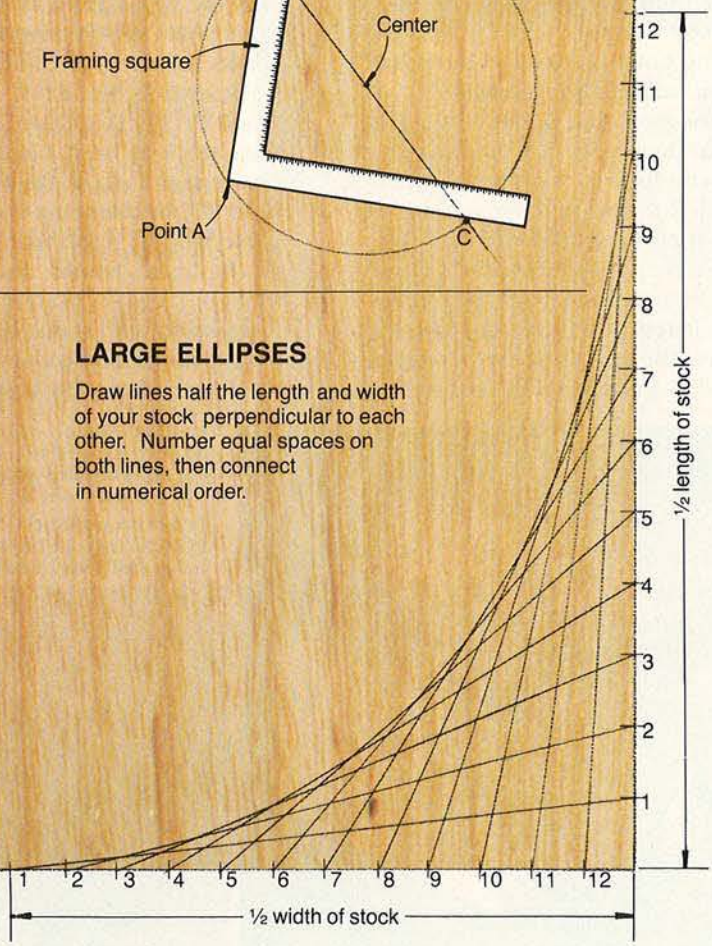


THE 90° ANGLE FOR SMALL CIRCLES



LARGE ELLIPSES

Draw lines half the length and width of your stock perpendicular to each other. Number equal spaces on both lines, then connect in numerical order.



BOWL BLANKS

A Refreshing Change of Pace for Turners Who Like a Challenge

Print this article

In our travels around the country, we see lots of unusual (but beautiful) turnings. And often when we ask the turner what wood the project is made from, he will tell us manzanita burl, spalted maple, wild lilac, or some other exotic-sounding species.

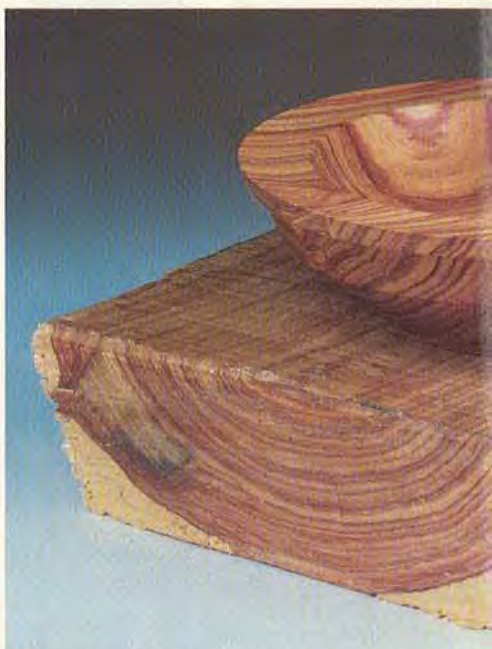
Finally, we couldn't stand the suspense any longer. We just had to try our hand at turning some of these beauties. Little did we realize when we made the first few calls to our regular lumber suppliers that only a handful of companies around the country market bowl blanks and burls. And we were choosy about the companies we used. Selling thick stock, like many lumber companies do, wasn't enough. Properly cutting and preparing bowl blanks and burls had to be one of their specialties. Although it took some digging, a lot of digging in fact, we found the results well worth the effort needed to locate these companies and their unusual stock.

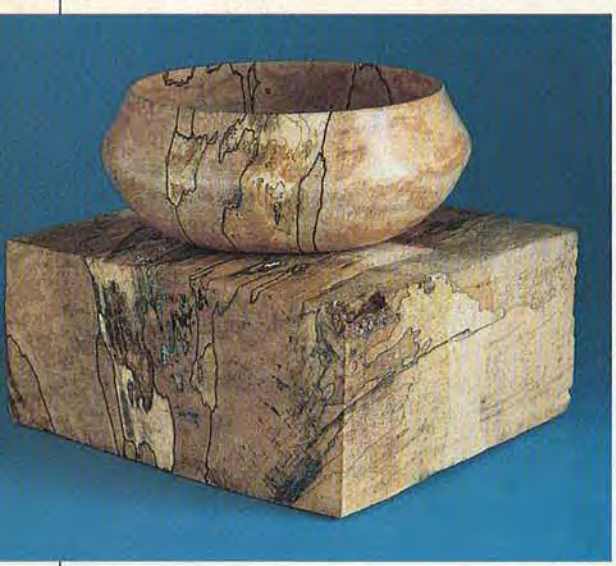
We then ordered several bowl blanks and burls from the companies listed at the end of this article. When the pieces started coming in, we divided the spoils among the staff (and one local woodturner) and we then proceeded to turn these "sow's ears" into "silk purses."

To give you a better idea of what we started with and ended up with, the photos show the finished project sitting on or beside a blank or burl nearly identical in size to the one from which it was turned.

WHAT'S AVAILABLE AND HOW IT'S SOLD

As a general rule, bowl blanks measure anywhere from 2″ to 6″ thick and arrive cut in squares ranging from 4″ to 12″ or so across. And in almost all instances, the supplier coats the end grain with paraffin, or another waxy product to prevent the wood from checking. Companies specializing in bowl blanks sell them as dimensioned stock such as 4x12x12″. Johnson Wood Products prepare and sell their stock as bowl blanks. The pieces run 1″ to 4″ thick and 4″ to 15″ in diameter. Burls — those woody, tumorlike growths on the limbs, trunks, and even roots of trees — usually come rough sized and marked by the pound. Some companies do cut the larger burls into smaller-sized





Spalted beech (left), sold by Native American Hardwoods, requires a sharp gouge and minimal pressure for a clean cut.

Cottonwood burl (below), sold by Cal Oak Lumber Company, turns easily and sands up quickly.

AND BURLS

(and Spectacular Results)

blanks providing for a far more economical purchase.

Craft Supplies USA of Provo, Utah, states that, as a rule of thumb, 1 board foot of their burl stock will weigh from 3 to 5 lbs. That means that a piece of box elder burl approximately 3x12x12″ would weigh from 9 to 15 lbs. and would sell for around $13 to $23 at $1.50 per lb. Others, such as Gilmer Wood Company of Portland, Oregon, will sell a burl in the rough for 40 cents per lb., but the price jumps to $1.50 to $2.00 per lb. if you want it milled.

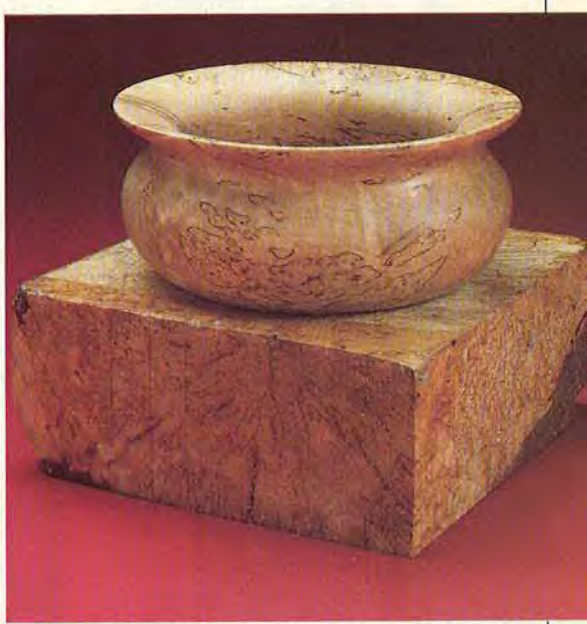
Prices for burls can be as low as $1 per pound for osage orange, but soar as high as $20 per lb. for pink ivory. Cal Oak Lumber Company sells their cottonwood and oak burls strictly by the piece, with a 2″-thick piece 24″ or less in diameter selling for $10, and up to $40 for a 3-4″ piece 48″ in diameter.

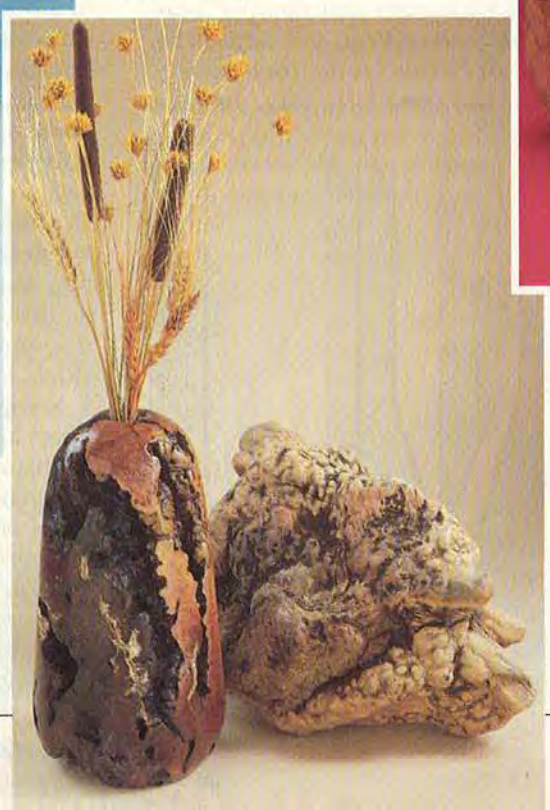
Some of these rarities, such as the spalted woods, can go fast and cannot always be restocked quickly. There's also some competition for choice burls, which clockmakers and veneer cutters prize highly. Don't let this discourage you, though; almost all the stock we inquired about was sent out immediately, and we got on relatively short waiting lists for the rest.

Highly figured myrtlewood burl (top center), from Gilmer Wood Company, turns much the same as koa or butternut.

Tulipwood, hard and dense, comes from the state of Bahia in Brazil via Arroyo Hardwoods.

This piece of mazur birch was imported from Finland by Berea Hardwoods. New to American turners, mazur birch resembles spalted wood but turns much more easily.





Cherry burl (far upper right corner), harvested from the Green Mountains of Vermont by Weird Wood, turns best when mounted between centers.

Manzanita burl (right), from southern California and the Baja, comes from Shir-Lee Manzanita Ranch. This wood turns best slowly with a heavy scraper.

THE SOURCES WE'VE LOCATED

Hopefully we've "turned you on" to the idea of working some of these rarities on your lathe. If so, contact the companies on page 86 for further information on their stock, prices, and shipping. If you're looking for a certain size or type of wood, *let them know:* they've all proved helpful!

Produced by Marlen Kemmet
Photographs: Bob Calmer

Print this article

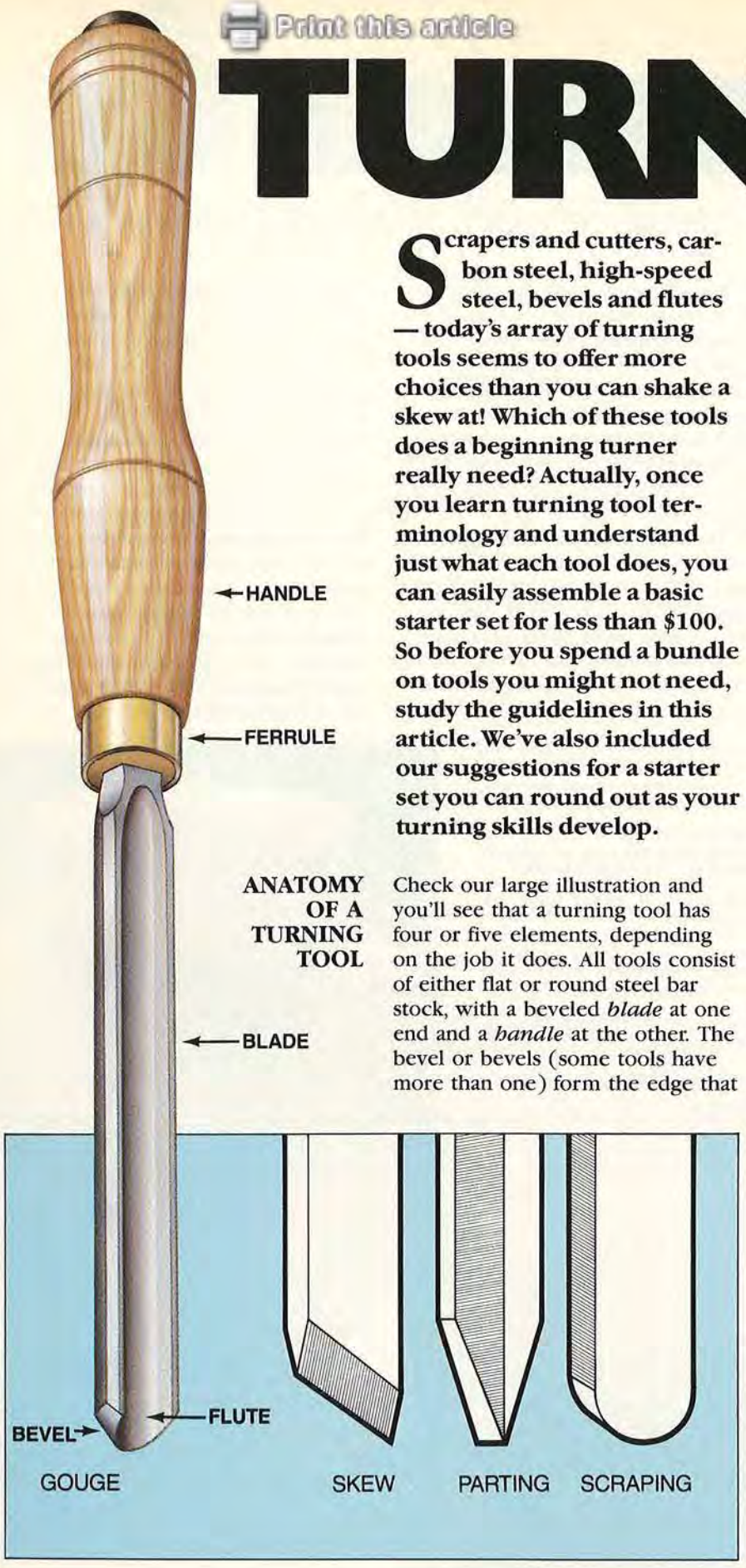
TURNING

Scrapers and cutters, carbon steel, high-speed steel, bevels and flutes — today's array of turning tools seems to offer more choices than you can shake a skew at! Which of these tools does a beginning turner really need? Actually, once you learn turning tool terminology and understand just what each tool does, you can easily assemble a basic starter set for less than $100. So before you spend a bundle on tools you might not need, study the guidelines in this article. We've also included our suggestions for a starter set you can round out as your turning skills develop.

ANATOMY OF A TURNING TOOL

Check our large illustration and you'll see that a turning tool has four or five elements, depending on the job it does. All tools consist of either flat or round steel bar stock, with a beveled *blade* at one end and a *handle* at the other. The bevel or bevels (some tools have more than one) form the edge that does the cutting. Besides being beveled, tools known as gouges are also *fluted* with a concave center that helps throw off shavings.

The other end of the tool has a wood handle, with a *ferrule* that keeps the handle from splitting. Some tool makers offer tools without handles (though you can buy them separately) because some experienced turners prefer to turn their own. Ferrules usually are brass or steel. Steel is somewhat stronger, but the choice here is basically decorative.



THE BIG FOUR TURNING TOOL TYPES

Though they come in a multiplicity of sizes, with lots of variations, turning tools fall into just four different classifications, illustrated *lower left.* Each type does best at a particular task, and some do several jobs well. Let's summarize their principal use:

- **Gouges** are fluted workhorses that remove lots of material in a hurry, such as when you shape square stock into a cylinder or remove material from the inside of a bowl.
- **Skew chisels** — so-called because the bevel is skewed at a 20-25° angle to the side of the blade — do general shaping and finish cutting on spindle turning and on the outside surfaces of faceplate projects.
- **Parting tools** make narrow recesses or grooves. The tool gets its name because you can also use it to cut all the way through the stock, leaving it in two "parts."
- **Scrapers** have a very shallow bevel and come in a wide variety of shapes. The flat bevel sets scrapers apart from the other three types of turning tools, because scrapers perform an entirely different role. To determine how many scrapers you should buy — if any — you need to know just what scraping tools can and can't do.

TOOLS WHAT TO KNOW BEFORE YOU BUY

SCRAPING TOOLS AND CUTTING TOOLS — WHAT'S THE DIFFERENCE?

What exactly happens when you press a turning tool into a spinning piece of wood? Depending on the tool you choose and the angle at which you hold it, you'll either *cut* the wood or you'll *scrape* it.

To cut (also known as shearing), you hold the tool at an angle to the rotating stock, fairly high above its centerline, with the handle slightly down, as shown in the drawing, *lower left.* The tool's edge — beveled 25 to 45 degrees from the end of the blade — shears away wood. You'll know you're cutting properly when curly shavings begin to pile up on the bed of your lathe.

To scrape, you hold the tool almost perpendicular to the stock, with the handle always slightly *up,* as shown in the drawing, *lower right.* Rather than shearing the wood, scraping wears it away, making dust, not shavings. Tools designed strictly for scraping have shallower, 15- to 20-degree bevels and a burr purposely left on after the edge is ground to provide the abrasion.

If you use it in the way just described, any cutting tool will also scrape, but because of the shallow bevel and burr, scrapers won't cut. So why buy scrapers at all? Actually, if your lathe work will be limited to turning between centers, you needn't invest in scrapers. If, however, you'd like to try your hand at faceplate turning, you'll find that scrapers are much better than cutters for some tasks, such as removing ridges from surfaces and finishing the inside bottom of a bowl where a gouge can't make a clean cut.

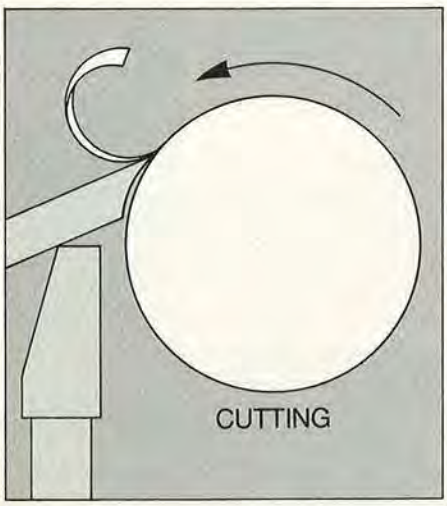
Many beginning turners start out by scraping their first projects, regardless of whether they're using a cutting or a scraping tool. Though easier than cutting, scraping takes more time and leaves a rougher surface that requires lots of sanding. We strongly recommend that you tip a cutting tool's handle down right from the start and master the cutting technique. Once you learn how to cut, quality turnings take shape in a hurry.

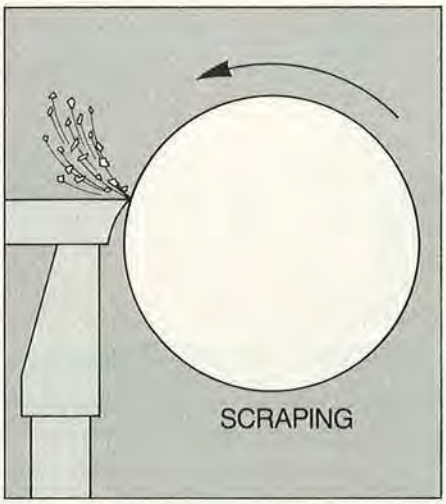
TOOL STEEL — TODAY, YOU HAVE SEVERAL OPTIONS

As if you don't already have enough decisions to make about which turning tools to buy, manufacturers also offer a choice of tool steels. Once again, you have four options:

- **Carbon steel** was the norm for years, and it costs the least. It also comes in the widest variety of shapes and sizes. You can quickly sharpen carbon steel, but it dulls more readily than other steels, turning blue in the process. Careless grinding — something we are all occasionally prone to — can also cause "bluing" and ruin the edge.
- **High-speed steel (HSS)** holds an edge much longer than carbon steel, even at the 1,000-degree-plus temperatures generated by turning. However, HSS is also more difficult to sharpen, and costs about a third more than carbon steel.
- **Laminated steel tools** utilize a forging process that bonds an extremely hard high-carbon steel cutting edge to a softer, more resilient steel backing. The result is a tool that holds a cutting edge almost as long as HSS, and can be honed to a much sharper edge. Laminated steel tools cost about twice as much as HSS versions and don't come in as wide a range of sizes and types.
- **Carbide-tipped** turning tools are relative newcomers to the scene. Like carbide-tipped saw blades, they feature a durable carbide cutting edge brazed to a steel blade. We ordered a set of carbide-tipped turning tools from Sears and found they performed very well in our shop. However, carbide-tipped tools cost more than twice as much as carbon steel tools. And though you can touch them up with a special whetstone Sears includes with the set, you have to either take them to a professional sharpening service for regrinding or invest in a costly diamond grinding wheel.

For a starter set, we feel you're best off sticking with either carbon steel or HSS. Besides its lower price, carbon steel offers another advantage for beginners: Because it turns blue when you overwork it, it tells when you are doing a heavy-handed job much sooner than HSS.





Continued

TURNING TOOLS

"LONG AND STRONG" VS. STANDARD-SIZED TOOLS

Standard tools all have 6" to 7" blades with 10" handles. These are big enough to handle most cutting needs, but don't try to extend the blade of a standard tool more than 4" beyond the tool rest. This puts a great deal of stress on the blade and handle, and could damage the tool or, worse yet, tear it out of your hands.

Some jobs, such as faceplate turning when you need to reach more than 4" deep into a bowl or vase, require a tool that has more length and heft than standard versions, so manufacturers have developed "long and strong" tools that are just that. Long and strong tools typically have 12" to 17" handles; the steel in these tools is longer, thicker, and wider than standard tool blades. Long and strong tools offer lots of rigidity and control for big projects, especially when you're turning green wood, but their size doesn't permit detail work.

Speaking of detail work, you can also buy miniature tools that are about 8" long for small jobs.

THE COST OF FINE TURNING

Sets of six or eight carbon steel tools usually cost $75 to $100; individual tools run $10-$20. As noted earlier, HSS adds about a third to the price tag of a carbon steel tool or set. Laminated steel tools come at a premium: $30 to $40 each. Carbide-tipped tools cost about $18 each, $65 for a set of five.

For long and strong tools, expect to pay $10 to $30 apiece for them, or about $120 for a set of six. Miniatures run $5 to $10 each, about $30 for a set of eight.

SHOULD YOU BUY A SET OR INDIVIDUAL TOOLS?

As we've noted, some companies offer sets of up to eight turning tools. These come with matching handles and are often packaged in a handsome box. Do sets make sense for a beginning turner?

On the plus side, sets can save you 10 to 15 percent over the cost of buying the tools individually, and most sets include at least one size of all of the "big four" types listed earlier.

Trouble is, depending on the turning jobs you want to do, the set may include some tools you'll never use, and lack others you need. This particularly applies if you're mainly interested in faceplate turning. Most sets consist of nothing but spindle turning tools, though a few manufacturers have put together sets for bowl turners, too.

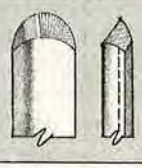
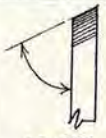
Whether you elect to invest in a set or buy individual tools, we think your first purchases should include the turning tools shown and discussed in the chart *below.*

Turn to page 83 for a listing of sources for wood turning tools.

Produced with George Granseth
Illustrations: Greg Roberts, Jim Stevenson

WOOD PICKS THE BASIC STARTER SET

With just six lathe turning tools you can handle most spindle work. Add a bowl gouge and a scraper or two and you can turn bowls as well. Make the tools shown here the first you buy. As your skills improve you'll undoubtedly want to add other sizes and types.

TOOL	OUR CHOICES	BEVEL	USES AND COMMENTS
GOUGE 	¾" AND ½" SPINDLE ½" BOWL	30-45°	You'll probably use these first and most often. Bigger gouges do roughing work; smaller ones handle details and fine cuts. Deep-fluted and short-beveled, bowl gouges remove stock quickly in faceplate work.
SKEW CHISEL	½" AND 1"	20-25°	After you've rounded down stock with a gouge, you use a skew to smooth it out and shape it. A skew can make V-cuts, beads, and shoulders. The cutting edge is skewed 30-35° from the tool's end; the bevel measures twice as long as the tool is thick.
PARTING TOOL	¾" WITH A ⅛" DIAMOND POINT TIP	25°	Parting tools do best at detail work. They also come in handy for "parting" tasks such as separating a small part from the main body of stock. The thickness of the tool's tip — ⅛" or ¼" — determines the width of the cut.
SCRAPER	½" ROUND-NOSE	 15-20°	The round-nose scraper, a good general-purpose tool for faceplate work, also makes coves and grooves on spindles. If you decide to buy a second scraper, get a 1" flat-nose. Other popular scrapers have hooklike blades specially shaped for turning inside bowls.

H·O·L·I·D·A·Y SPECIALS FROM·THE·SHOP

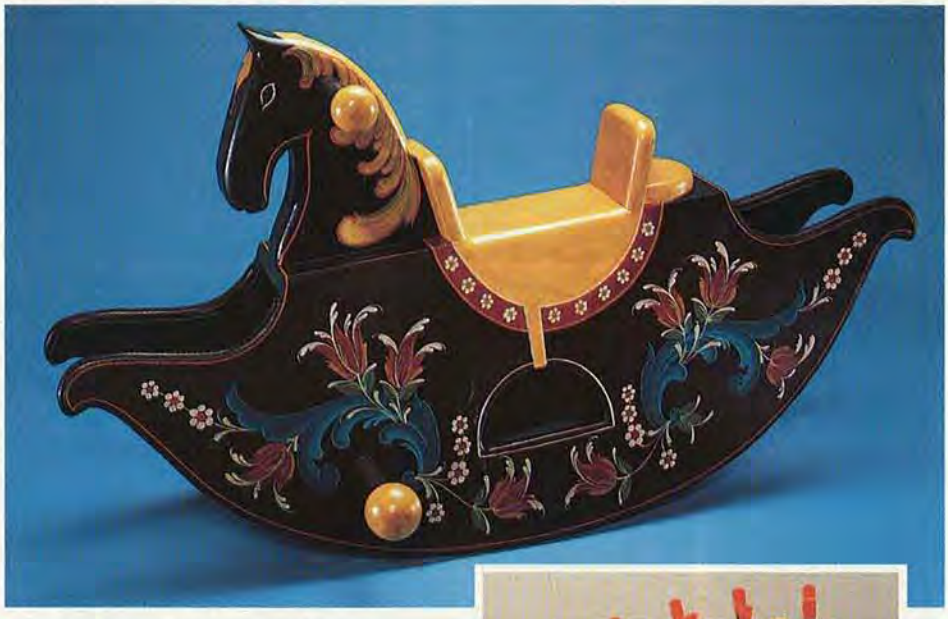
A 15-page treasure trove of well-designed projects sure to delight several special folks on your shopping list. Six projects in all...every one a winner.

Print this article

Thoroughbred Rocking Horse

From Merry Olde England

H·O·L·I·D·A·Y
SPECIALS
FROM·THE·SHOP



If you want to see a little tyke's eyes light up, put a rocking horse like this under the tree. It's lightweight, yet sturdy — and very huggable.

Like the Seventeenth-Century original in the Museum of London, our version is made safer by the curved projections at the front and rear of each rocker. The "stops" prevent energetic riders from tipping too far forward or backward while they whoop it up in the saddle. Finish your horse with stain and polyurethane or do it fancy (we had the horse on this page decorated by a tole-painting expert).

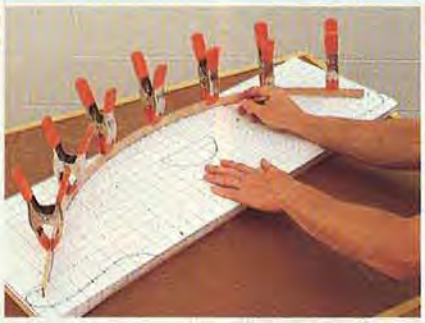
READY THE ROCKERS

1 From ¾" cherry, rip three pieces 4¼x76". Edge-join the pieces together, clamping scrap stock across the pieces to keep them flat. Scrape off the excess glue once a tough skin has formed.

2 Crosscut the lamination in half to form the blanks for the rockers (A). With a table saw, bevel-rip the top edge of each rocker piece at 15°. Then, use double-faced tape to stick the two rockers together with the high edges (points) of the bevels together and flush.

3 With a ruler and straightedge, lay out 1" squares on a large piece of paper to form a grid pattern measuring 13x36". Use spray adhesive on the back of the grid paper to attach it to the taped-together rocker pieces.

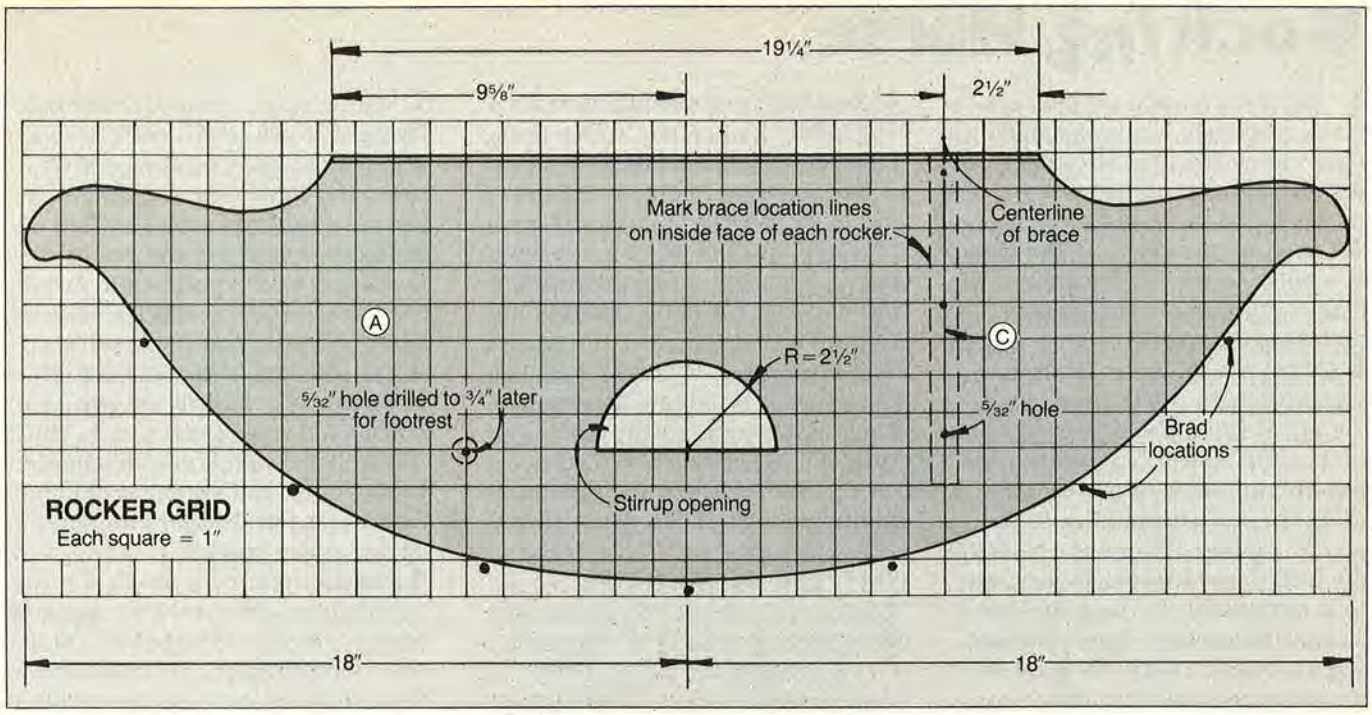
4 Using the Rocker-Grid Drawing as a guide, mark the points where the rocker outline crosses each grid line to lay out the front and rear stops and top 3" of the rocker. Connect the points to transfer the



shape of the rocker stops onto the grid paper. Mark the location of the stirrup opening as well as the footrest hole and screw holes (for part C) where shown on the drawing. To form the rocker bottom, drive 1" brads into the grid where shown on the drawing. Clamp a flexible strip of wood to the brads and trace along the inside edge of the strip as shown in the photo *above*.

5 With the rockers still taped together, cut them to shape. Drill a ½" blade access hole through the marked stirrup opening; then cut the opening to shape with a jigsaw or scroll saw.

6 Drill three 5/32" holes through both rockers for later mounting



of the brace (C). Then, drill a 5/32" hole for the footrest (see the Rocker-Grid Drawing for locations). By drilling through both rockers, you've assured precise alignment of the ¾" footrest dowel later.

7 Sand the edges of the rockers (we belt-sanded the bottom of the rockers and drum-sanded the harder-to-get-at areas around the stops). Wrap sandpaper around a strip of thin stock, and use it to sand the edges of the stirrup openings. Separate the two rockers, remove the grid paper, and sand off any sticky residue.

8 To make a jig for drilling the angled footrest holes through each rocker, start by ripping a 12" length of 2x4 in half. Set one of the pieces aside, and drill a ¾" hole 3½" deep centered into either end of the other piece. Miter-cut the scrap at 15° so that the saw cut intersects the ¾" hole. Then, draw a centerline along the longest face of the jig.

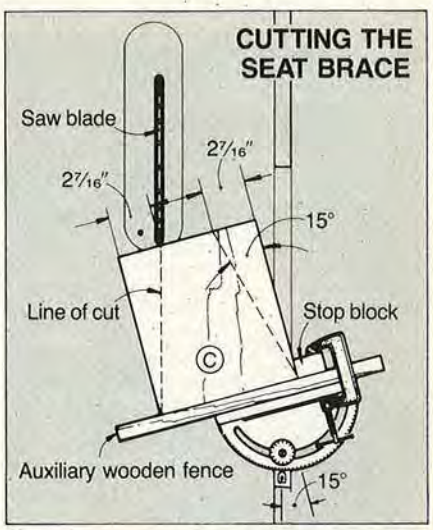
9 Use a framing square to mark a line centered through the 5/32" pilot hole perpendicular with the beveled-top edge of each rocker. Clamp the jig in place parallel with the beveled top edge of the rocker and centered on the line drawn through the 5/32" hole as shown in

the photo *above*. Drill the ¾" footrest-dowel hole through the rocker. Repeat with the other rocker.

10 Using a ¼" round-over bit, rout both edges of the stirrup opening in each rocker. Readjust the ¼" roundover bit to leave a 3/32" shoulder. Rout the edges of each rocker to form a bead (see the Bead Detail that accompanies the Exploded-View Drawing.) Don't rout the top edge. Round off the end of the bead (where it meets the top-beveled edge) with a chisel, then sand it to finished shape.

BUILD AND ASSEMBLE THE BODY

1 First, cut the seat (B) oversize, then bevel-rip both edges at 15° to a 4⅜" width. Bevel-cut both ends at the same angle to a 18¾"



length. Mark the location of the six rocker mounting screw holes on the top of the seat. Then, drill ⅜" holes ¼" deep at these points. Switch to a 5/32" bit and drill the screw-shank holes centered in the ⅜" hole you just drilled (see the Screw-Hole Detail on the Exploded-View Drawing).

2 From ¾" stock, rip and crosscut a piece 7¾x9" for the seat brace (C). Set your table saw miter gauge to 15° left of center, and attach an auxiliary wooden fence and stop as shown in the drawing *above*. Rip the seat brace, flip the brace over, and rip the other side.

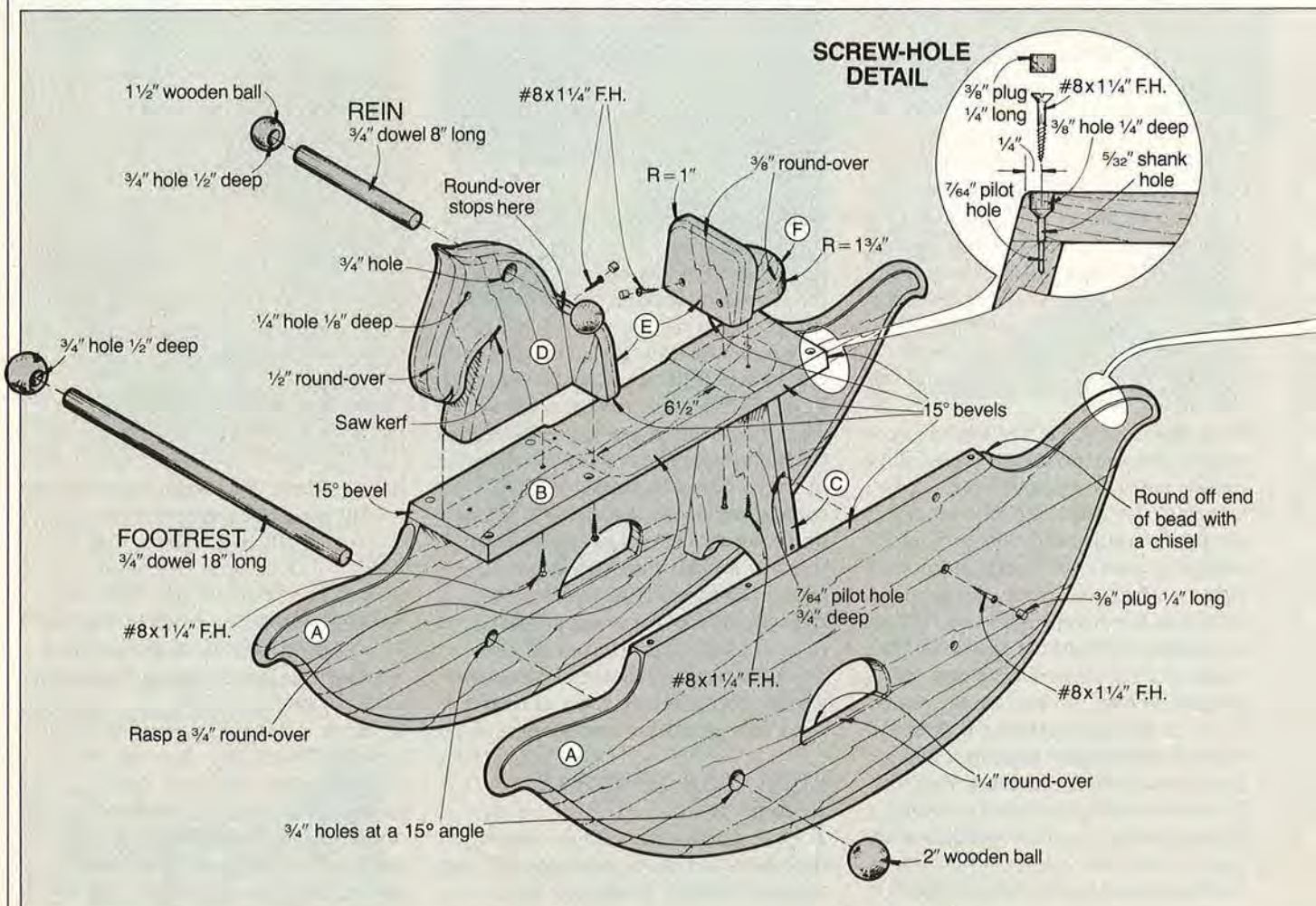
Continued

Rocking Horse

3 Lay out the radii on the seat brace where shown in the Brace Drawing on the opposite page. Cut the bottom edge of the seat brace to shape and drum-sand it.
4 Using the Rocker-Grid Drawing as a guide, mark the location of the brace (C) on the inside face of each of the rockers.
5 Clamp one of the rockers in a vise with its beveled top edge facing up. Position the seat on the rocker. Then, drill 7/64" pilot holes into the top edge of the rocker, using the 5/32" shank holes in the seat as a guide. (Be careful to keep the drill perpendicular to the seat to avoid drilling through the inside face of the rocker.) Now, glue and screw the seat to the rocker. Use the same procedure to attach the seat to the other rocker.
6 Remove the assembly from the vise. Slide the brace (C) into position between the rockers, centered between the lines drawn on the inside faces. Drill 7/64" pilot holes 3/4" deep into the brace centered in the 5/32" shank holes drilled earlier in the rockers. Glue and screw the rockers to the brace.
7 Plane a scrap of cherry 5/16" thick. Use a 3/8" plug cutter to cut plugs 5/16" long from the scrap. Glue the plugs over the screws, taking care to match the direction of the grain. Sand the plugs flush.

TOPPING THINGS OFF

1 Rip and crosscut two pieces of 3/4" cherry to 9x10" for the head (D). Glue and clamp the pieces together face-to-face. When dry, trim the bottom for a square edge.
2 With a ruler and a straightedge, lay out 1" squares to form a 10x11" grid pattern on a piece of paper. Using the Head-Grid Drawing as a guide, transfer the shape of the head (as well as the eye and rein locations) to the grid paper. Attach the pattern to your stock with spray adhesive. Cut the head to shape, and sand the edges smooth.
3 With a 1/4" bit, drill the eye holes 1/8" deep. Switch to a 3/4" bit, and drill the rein hole, backing the head with scrap to prevent chip-out. Remove the grid paper and sand off any sticky residue.
4 Cut the saddle pieces (E, F) to finished size, bevel-cutting one end of each piece at 15°. Mark the radii where indicated in the Exploded-View Drawing, and cut the saddle pieces to shape. Sand the radiused



edges smooth. Using a table-mounted router with a ⅜" round-over bit, rout the top and side edges of the saddle pieces that will face the rider. (To make sure we routed the correct edges, we held the pieces in place on the body and marked the edges to be routed.)

5 Dry-clamp the front saddle piece to the horse's head, with the bottom edges flush. Make a mark on the head where the top edge of the saddle intersects it. Drill three mounting holes through the saddle piece and into the head to the sizes shown in the Screw-Hole Detail. Separate the pieces and rout the edges of the head using a ½" round-over bit where shown in the Exploded-View Drawing. Use a chisel to complete the round-over where the jaw meets the neck.

6 Glue and screw the front saddle piece to the head, then dry-clamp the head assembly to the body. Using the same bit combination used earlier, drill and counterbore three screw holes through the seat and into the head. Glue and screw the head assembly in place.

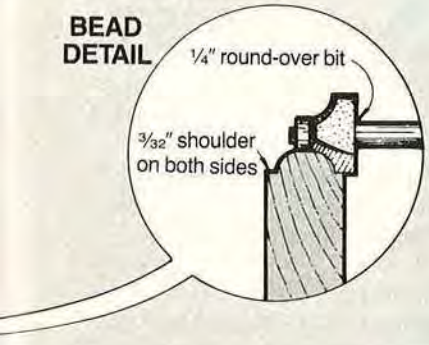
7 Drill the mounting holes, then glue and screw the remaining saddle piece (E) to (F). Now, glue and screw this assembly to the seat leaving 6½" between it and the front saddle piece.

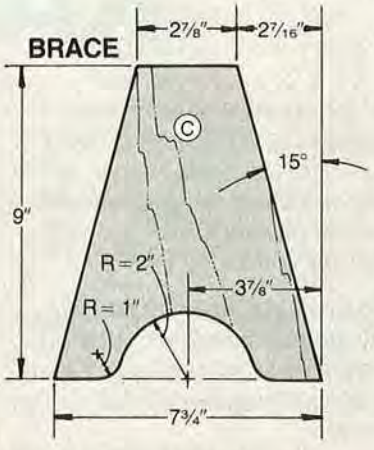
8 Drill a ¾" hole ½" deep in each of the four wooden balls to accept the footrest and rein dowels. (To hold the balls steady while drilling, we bored a 1" hole through a piece of ¾" scrap. Then, we set each ball, end grain up, in the hole, and clamped it in a handscrew. Finally, we clamped the assembly to our drill press table as shown in the photo *below*.

9 Cut the ¾" footrest and rein dowels to length (18" and 8" respectively). Then, insert the dowels to within ¾" of their final centered position. Spread glue all the way around the dowel and push each dowel into position. Glue the 2" wooden balls onto the ends of the footrest dowel and the 1½" balls onto the ends of the rein.

10 Rasp a ¾" round-over on the seat edges between the saddle pieces (E). Sand both of the round-overs smooth.

11 Finish-sand the entire horse, paying particular attention to the contours of the head. Apply several coats of finish, rubbing lightly with steel wool between coats.



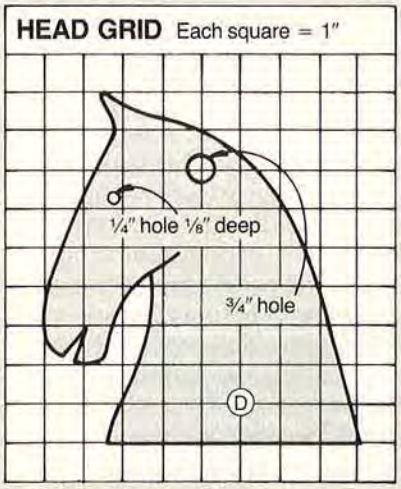


Bill of Materials

Part	Finished Size* T	W	L	Material	Qty.
A*	¾"	11½"	36"	cherry (edge joined)	2
B*	¾"	4⅜"	18¾"	cherry	1
C*	¾"	7¾"	9"	cherry	1
D*	1½"	8"	9"	cherry (laminated)	1
E	¾"	4"	3¼"	cherry	2
F	¾"	3½"	3"	cherry	1

*Parts marked with an * are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: double-faced tape, #8x1¼" flathead wood screws, 1" brads, paper for drawing grids, ¾" birch dowel, spray adhesive, finish, #0000 steel wool



BUYING GUIDE

• **Wooden balls.** 1½" birch balls, catalog no. 46, $.60 each. 2" birch balls, catalog no. 48, $1.20 each. Plus $1.95 shipping. Cherry Tree Toys, Inc., Box 369-9, Belmont, OH 43718, or call 614/484-4363.

Project Design: Kim Downing
Photographs: Hopkins Associates; Craig Anderson

H·O·L·I·D·A·Y
SPECIALS
FROM·THE·SHOP

OAK MAGAZINE RACK WITH A TWIST

Print this article

Looking for a project to test your skills in joinery? This magazine rack features a center-lap joint that not only crosses at an oblique angle, but is tapered to boot! It begs to be cut by hand, and we'll show you how.

Note: *You'll need some ½" oak for this project. You can either resaw or plane thicker stock to the correct thickness or special-order it. See the Buying Guide on page 69 for our source.*

FORMING THE END PANELS

1 Cut the end panels (A) to a rectangular size of 10x12". (We edge-joined three boards for each end.)

2 Using double-faced tape, stick the two end panels together, with the best faces facing out and the edges flush.

3 Draw a 1" grid pattern measuring 10x12" on a piece of paper. Using the right half of the End-Panel Half Grid as a guide, mark the points where the end-panel outline crosses each grid line to lay out the end panel on the gridded paper. Fold the paper in half and cut it to shape. Unfold the paper and lay out the screw-hole locations.

4 Apply spray adhesive to the back of the gridded paper, and stick it to the face of one of the end panels. Cut slightly outside the marked outline with a band saw, then belt-sand the edges of both end panels to the line for the finished shape.

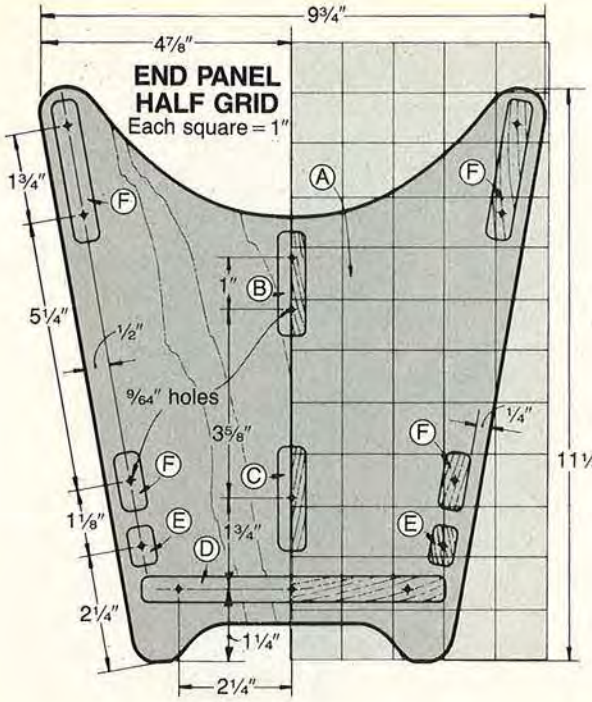
5 With the ends still taped together, drill 9/64" shank holes where marked, drilling completely through both end panels. (We placed a scrap board under the ends to keep chip-out at a minimum.)

6 Using the 9/64" shank holes as guides, counterbore 3/8" holes ¼" deep for the plugs on each end panel (see the Screw-Hole Detail on the Exploded-View Drawing). Now, separate the end panels, and remove the double-faced tape. Then, rout a 3/16" round-over on all edges of both end panels.

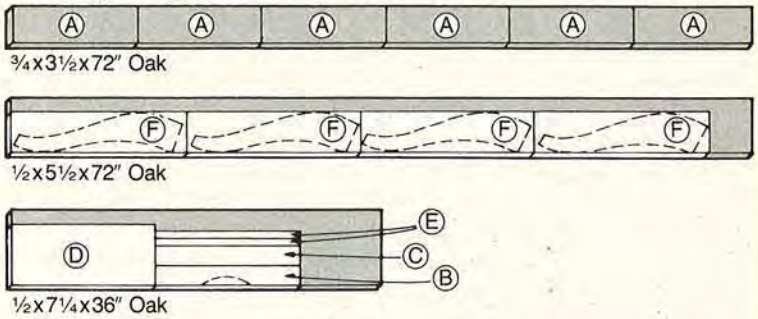
CUTTING THE HANDLE, DIVIDER, BOTTOM, AND LOWER RAILS

Note: *Parts B, C, D, E, and F are joined to the end panels using*

Text continued on page 68



Cutting Diagram

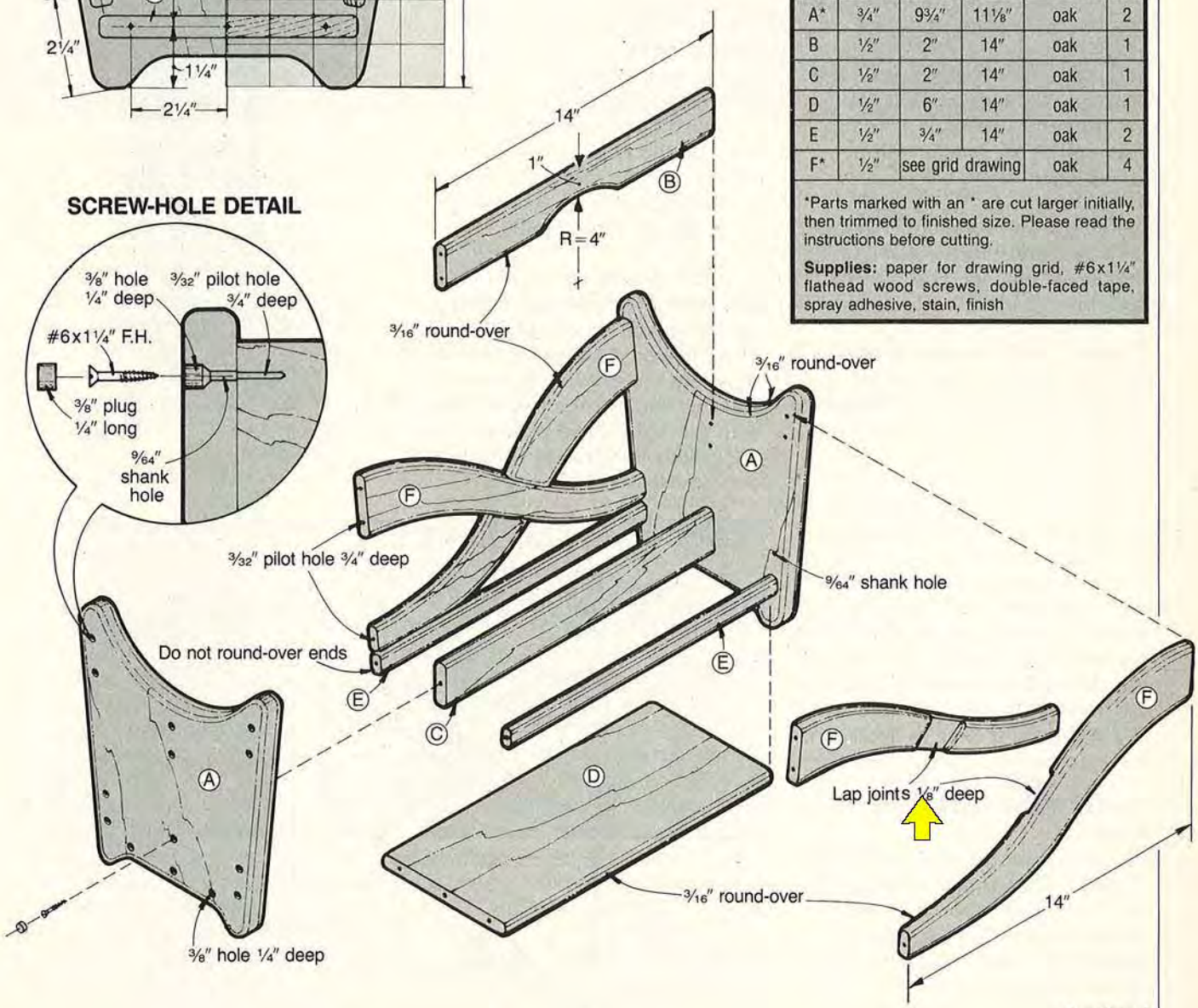


Bill of Materials					
Part	Finished Size*			Material	Qty.
	T	W	L		
A*	¾"	9¾"	11⅛"	oak	2
B	½"	2"	14"	oak	1
C	½"	2"	14"	oak	1
D	½"	6"	14"	oak	1
E	½"	¾"	14"	oak	2
F*	½"	see grid drawing		oak	4

*Parts marked with an * are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: paper for drawing grid, #6x1¼" flathead wood screws, double-faced tape, spray adhesive, stain, finish

SCREW-HOLE DETAIL



Continued

glued butt joints reinforced with wood screws. For a proper fit, make sure you cut all these parts to the same length.

1 Cut the handle (B), divider (C), bottom (D), and lower rails (E) to the sizes listed in the Bill of Materials from ½" oak. (We ripped all the pieces first. Then, we set a stop 14" from the blade of our radial arm saw to ensure a consistent length.) Cut the center-radiused hand grip in the handle where shown on the Exploded-View Drawing on the previous page.

2 Locate the center of each end of the divider, bottom, and both lower rails, then drill a 3/32" pilot hole ¾" deep in each. Locate and drill *one* 3/32" hole in each end of the handle (the second hole on each end of the handle will be drilled later).

3 Route a 3/16" round-over along the edges, but *not* the ends, of the handle, divider, bottom, and both lower rails.

4 Make a trial assembly of the parts by screwing the handle, divider, bottom, and both lower rails between the end panels. Do *not* use glue.

5 Using a straightedge, align the handle with the divider. Using the 9/64" shank holes previously drilled in the end panels as guides, drill the second set of 3/32" holes in the handle ends. Square the bottom piece with the divider and handle, and drill the second set of holes in the bottom. Set the assembly aside. You will need it later to determine the length of the curved rails (F).

FASHIONING THE CURVED RAILS

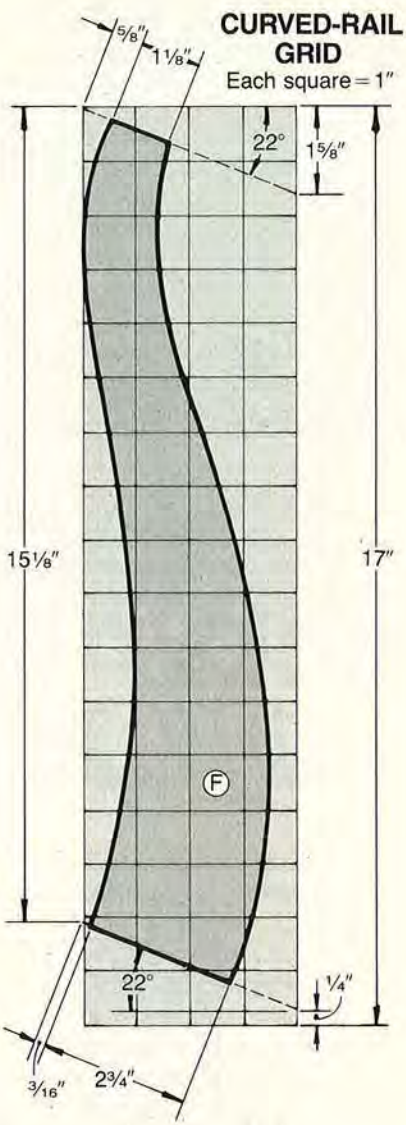
1 Cut four pieces of ½" oak 4x17". With a ruler and straightedge, lay out 1" squares to form a pattern measuring 4x17". Using the Curved-Rail Grid as a guide, mark the points where the curved-rail outline crosses each grid line. Use a thin flexible scrap of wood to connect the points to form the curved lines. Use spray adhesive on the back of the pattern to attach it to one of the curved-rail blanks (F).

2 With the edges and ends flush, stick the four curved-rail pieces together with double-faced tape.

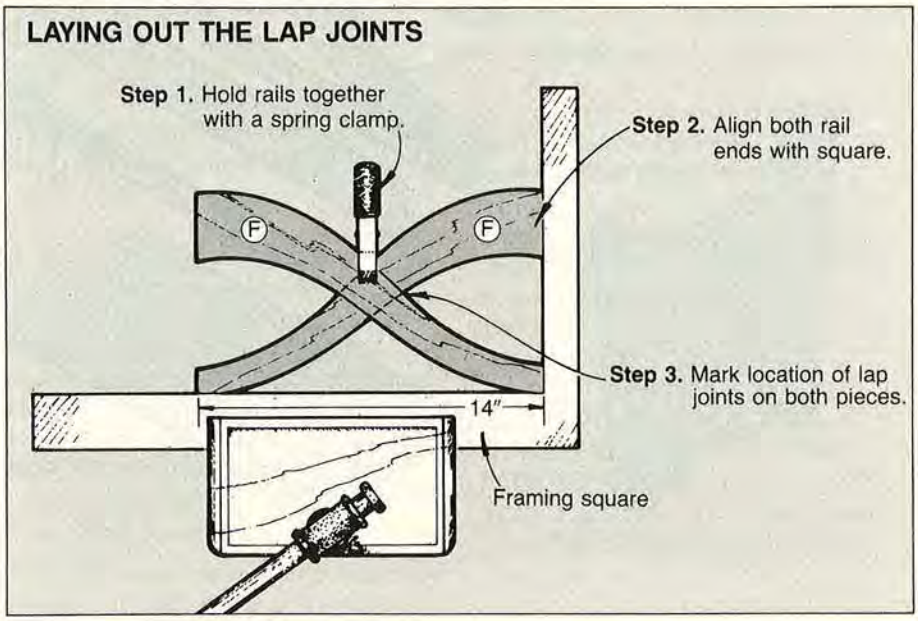
3 Set your radial arm or table saw to cut 22° right of center, and trim the ends of the taped-together boards. Cut the curved rails to shape. Now, sand the edges of the rails (but not ends) smooth. Remove the gridded paper.

4 Clamp the taped-together rails in a woodworker's vise with the narrow ends up and level. Drill a 3/32" pilot hole ¾" deep, centered into the narrow end of each curved rail. Pull the rails apart and remove the tape. Then, rout a 3/16" round-over along the edges, but *not* the ends of each curved rail.

5 To lay out the lap joint on the rails, start by clamping a framing square in your woodworker's vise. Then, position the paired rails as shown in the drawing *below* so that one end of each pair is *flush* with the square, and opposite ends are exactly 14" apart. (Trim the curved rails at 22° if they are a



LAYING OUT THE LAP JOINTS


Step 1. Hold rails together with a spring clamp.
Step 2. Align both rail ends with square.
F
F
Step 3. Mark location of lap joints on both pieces.
14"
Framing square

bit too long. If they are too short, trim B, C, D, and E.) Use a spring clamp to hold the paired rails together when you have them properly aligned.

6 Use a sharp pencil to mark both curved rails where they overlap. Then, separate the rails, and repeat for the other pair, keeping the paired rails together. To mark the depth of cut needed for each lap joint, measure and mark a line ⅛" from the face on each curved rail (we used a combination square and sharp pencil for this).

7 As shown in the photo *above,* make the first two cuts ⅛" deep on the *inside* of the marked lap-joint lines. Then, cut several more kerfs between the first two (the closer the kerfs, the easier the waste is to chisel out in the next step).

8 Chisel the waste between the lap lines, as shown in the photo in the upper right-hand corner. (You could also use a router fitted with a straight bit to make the recess.) Finish by taking finer cuts with the chisel, and touch up with a rasp if necessary. Test-fit the pieces.

9 Glue both pairs of curved rails together, again using the framing square to align the ends of the rail pairs. Now, before the glue on the curved rails sets, clamp them in position, centering the bottom ends over the 9/64" shank holes drilled earlier in the end panels. Screw the bottom end of each curved rail to the end panel, using spring clamps to hold them together at the lap joints. Using the shank holes in the end panels as guides, drill a pair of 3/32" holes in the upper ends of each curved rail.

FINAL ASSEMBLY

1 Disassemble the rack by removing the screws. Sand all the pieces smooth: It's too difficult to finish-sand all the pieces when the rack is assembled.

2 Glue and screw all the parts to one end panel. (We applied a coat of glue to the end grain, waited a minute and added a bit more). When one end of the assembly is completed, attach the opposite end panel in the same manner. Scrape off all excess glue once a tough skin has formed, being careful not to mar the sanded surfaces.

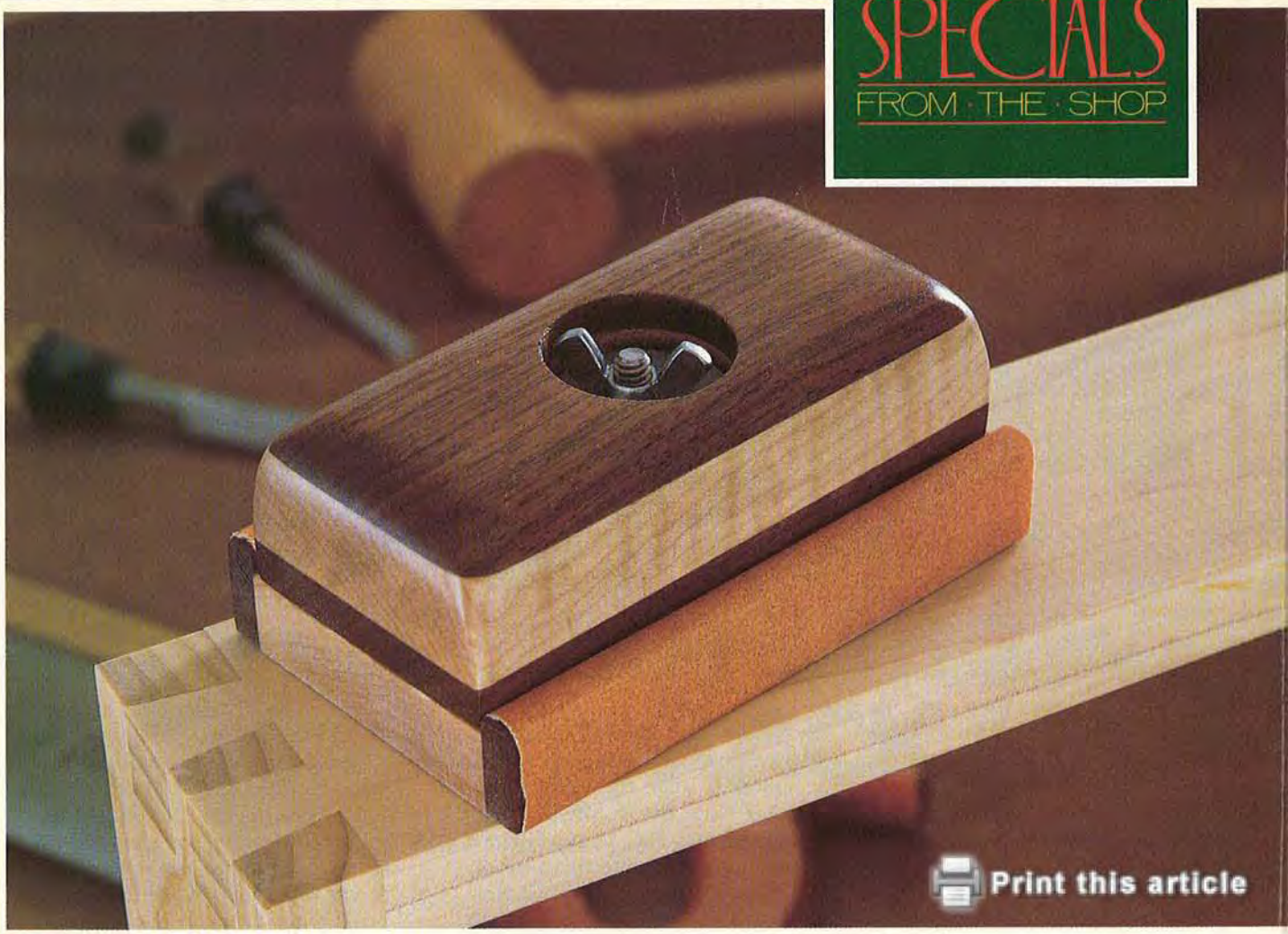
3 With a ⅜" plug cutter, cut 5/16"-long oak plugs. (We planed down a scrap piece of the ½" oak to 5/16". Then, we chucked the plug cutter in our drill press and clamped the scrap to the table and proceeded to cut the plugs.) Glue the plugs in place with the grain of the plugs running the same direction as the grain of the end panels. Sand the plugs flush.

4 Sand all surfaces smooth. Apply the stain and finish of your choice to the magazine rack.

BUYING GUIDE

- **½" oak.** ½x7¼x48" oak (1 piece needed), catalog no. 5LU275, $17. ½x7¼x72" oak (1 piece needed), catalog no. 5LU276, $25.50. Constantine, 2050 Eastchester Rd., Bronx, NY 10461, or phone 212/792-1600.
- **3/16" round-over bit.** Router bit with ball-bearing guide, ¼" shank. Catalog no. RO4316, $19.97. Woodcraft Tools USA, P.O. Box 60906, Sacramento, CA 95860, or call 916/363-9428.

Project Design: Jay Taylor
Photographs: Hopkins Associates; Bob Calmer
Illustrations: Kim Downing; Bill Zaun



*Collector's Edition

SANDING BLOCK

The idea comes from *WOOD* subscriber M. C. "Morrie" Patten of Mesa, Arizona, who makes his laminations long enough to yield at least two sanding blocks at a time. That way, they're easier to machine, and he has several to present to his woodworking buddies. We were so impressed with Morrie's idea, we decided to make a couple of these beauties for our own shop and share his idea with you.

MAKING THE SANDING BLOCK BASES

1 Rip and crosscut a piece of ¾" maple to 2¼x10" long, enough for two bases (A). Now, joint, resaw, or hand-plane the maple to ⅝" thickness.

2 Rip two strips of walnut ¼" wide from the edge of a piece of ¾" stock. Crosscut each to 10" for the sides (B).

3 Glue and clamp one walnut strip to each edge of the maple, with the *bottom* edges flush. Scrape off any glue squeeze-out.

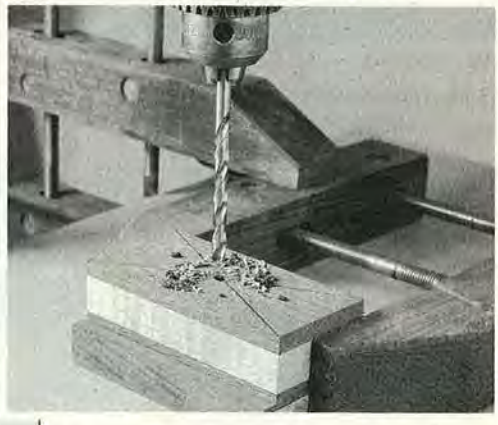
4 Crosscut two 4½"-long bases from the lamination.

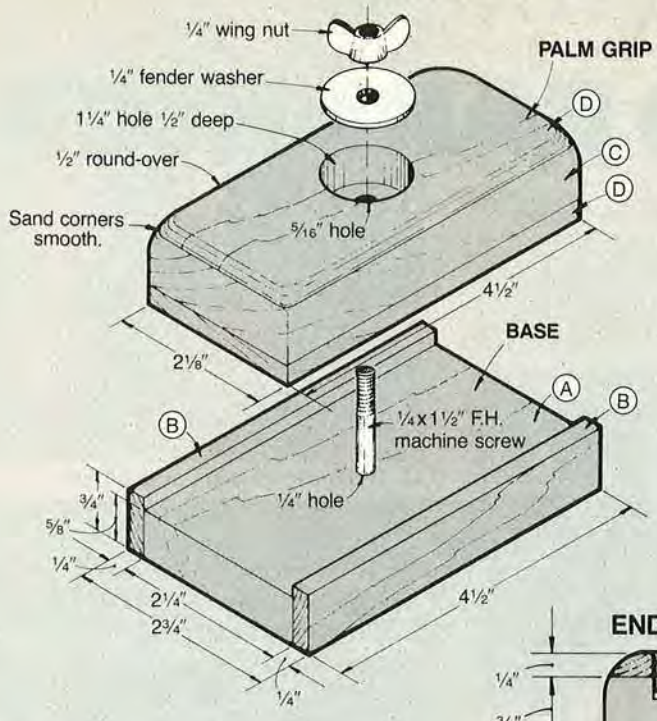
THE PALM GRIPS COME NEXT

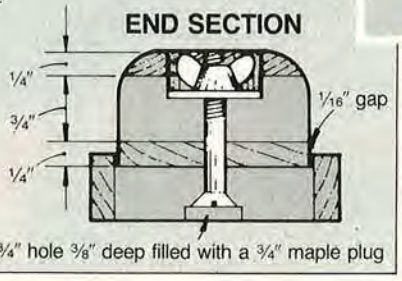
1 Start by cutting one piece of ¾" maple (C) and one piece of ¾" walnut (D) to 2¼x10" long. Using a band saw or table saw, resaw the walnut into two pieces just under ⅜" thick each.

2 Glue and clamp the maple between the two pieces of walnut, sandwich-fashion, making sure that all edges align exactly.

3 Remove the clamps and scrape off any excess glue. Then, joint or plane the walnut top and bottom pieces to a finished thickness of ¼" each. Now, joint or plane the edges until the palm grip fits snugly







Bill of Materials					
Part	Finished Size* For One Sanding Block			Material	Qty.
	T	W	L		
A*	⅝"	2¼"	4½"	maple	1
B*	¾"	¼"	4½"	walnut	2
C*	¾"	2⅛"	4½"	maple	1
D*	¼"	2⅛"	4½"	walnut	2

*Parts marked with an * are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: ¼x1½" flathead machine screw with fender washer and wing nut, epoxy, felt (optional), finish

between the protruding walnut sides of the base (you'll sand the palm grip to finished width later).

4 Crosscut the palm-grip lamination into two 4½" lengths.

DRILLING THE BOLT AND WING NUT HOLES

1 Mark diagonals on the top of each palm grip to locate its center, position the palm grip in the base with the ends flush. Clamp the palm grip and base to your drill-press table, and drill a ⅛" guide hole through both pieces as shown in the photo, *upper right.* (For this and the following steps, we machined both sanding block pieces at once.)

2 Separate the two pieces, and, using a flat-bottomed bit, drill a 1¼" hole ½" deep into the *top* of the palm grip, centered over the guide hole (see drawings for hole size details). Then, drill and counterbore a ¾" hole ⅜" deep centered over the guide hole on the *bottom* side of the base.

3 Drill a ¼" hole through the base and a 5/16" hole through the palm grip, centering both holes on the guide hole. Countersink the ¼" hole on the *bottom* side of the base.

4 Hand-plane or sand 1/16" off each side (not the ends) of the palm grip for a 2⅛" finished width.

5 Clamp the base, bottom up, in a woodworker's vise. Thread a ¼x1½" machine screw through the hole and tighten the palm grip to the base with a wing nut. Epoxy the screw in the hole in the base. Cut a ¾" maple plug, and epoxy it over the head of the screw.

6 Detach the base from the palm grip, and sand the plug flush with the base. Sand the base smooth.

7 Fit your table-mounted router with a ½" round-over bit, and rout the top edges of the palm grip. Finally, sand the palm grip to fit comfortably in your hand.

8 You may want to cut and glue a piece of felt to the bottom of one or all of the sanding blocks for sanding pieces with slight contours. Trim the edges of the felt flush with the base.

FINAL ASSEMBLY AND FINISHING

1 Fit a fender washer in the hole in the palm grip. Then, apply the finish of your choice to the base and palm grip.

2 To use, slip the palm grip over the bolt on the base, and just start the wing nut. Quarter a standard sheet of sandpaper, and tuck the sides under the palm grip. Now, tighten the wing nut to hold the sandpaper firmly in position.

Project Design: M. C. "Morrie" Patten
Photographs: Bob Calmer
Illustration: Bill Zaun

HIGH FASHION LAMINATED EARRINGS

Print this article

Here's your chance to be creative and to impress that special lady at the same time. You can make any number of interesting designs from one laminated blank. If you like small-scale, quick-to-make projects, you're gonna love this one.

Note: *You'll need some thin stock for this project. You can either resaw or plane thicker stock to the correct thickness or special-order it. See the Buying Guide on the opposite page for our source of thin stock and other supplies and tools.*

MAKING UP THE LAMINATED BLANK

1 Crosscut ⅛"-thick pieces of walnut (A), maple (B), and bubinga (C) — or any combination of woods you choose — to 6" long each. Rip the walnut to 1", the maple to ½", and the bubinga to ⅜". (We ripped ours on the band saw.)

2 To clamp the pieces together, start by drawing a straight line across a piece of ¾" plywood. Cover the plywood with waxed paper, and drive several small 1" nails about ½" deep along the marked pencil line.

3 With one edge of the walnut against the nails, glue the maple to the walnut. Pinch the two pieces together, and drive nails along the edge of the maple to "clamp" the pieces as shown in the photo *below.* After the glue dries, pull the

nails, and scrape off any excess glue. Rip the maple to finished width (1/16"); plane the edge, if necessary. (We ripped ours to ⅛" on the band saw, and hand-planed it down to 1/16".) Glue the bubinga to the maple using the same clamping technique as before.

4 Remove the nails, lamination, and waxed paper from the plywood. Place several strips of double-faced tape on the plywood to hold the thin strips stationary. Now, stick the lamination to the tape, and sand both surfaces smooth.

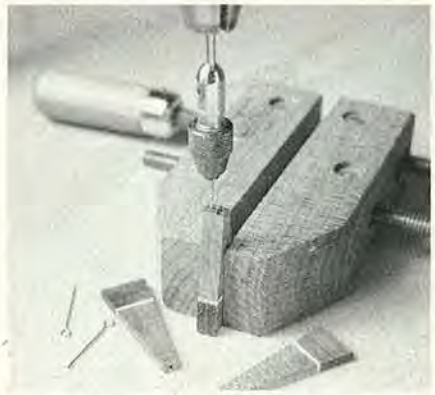
SHAPING AND FINISHING THE EARRINGS

1 Using carbon paper, transfer the shape of the full-sized earring pattern(s) shown *below* to cardboard. Cut the template(s) to shape.

2 Cut the lamination into two 3"-long pieces, and use double-faced tape to stick the two pieces together, one on top of the other. Now, using the template(s), trace the earring pattern(s) onto the stock. Cut the earrings to shape using a scroll saw or a band saw.

3 With the earring still taped together, sand the edges flush.

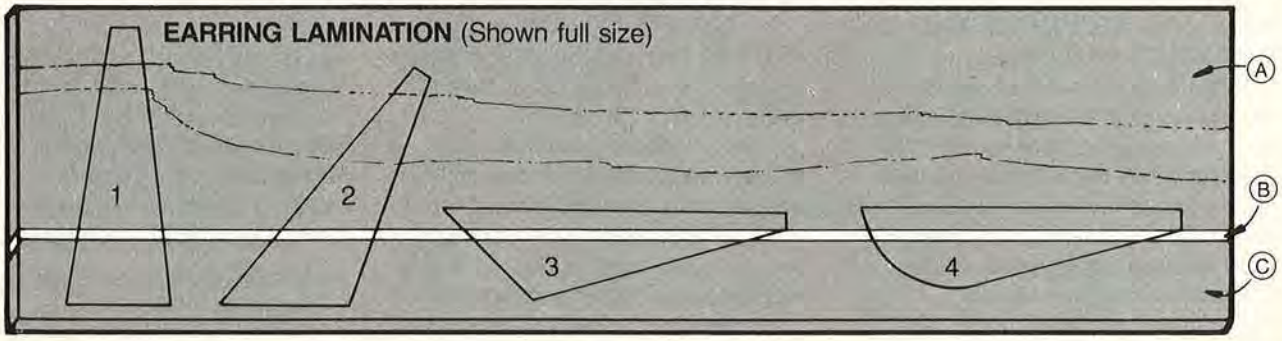
4 As shown in the photo *below*, clamp the taped earring pairs in a small handscrew, and secure a #64



Bill of Materials

Part	For One Earring Blank T	W	L	Material	Qty.
A	⅛"	1"	6"	walnut	1
B	⅛"	1/16"	6"	maple	1
C	⅛"	⅜"	6"	bubinga	1

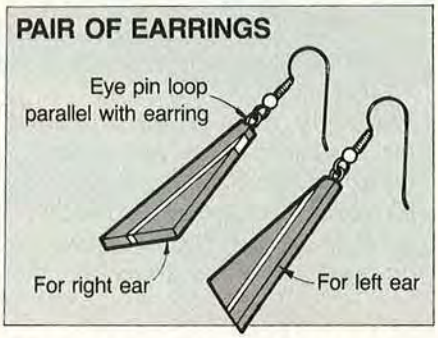
Supplies: waxed paper, 1" nails, epoxy, double-faced tape, #0000 steel wool, finish, paste wax



(.036") wire size drill bit (see Buying Guide) in a miniature chuck. Now, mount the miniature chuck and bit into your drill-press chuck, and drill the eye-pin holes ½" deep in the earrings. Caution: *Drill the holes carefully.* The bits bend easily and can break.

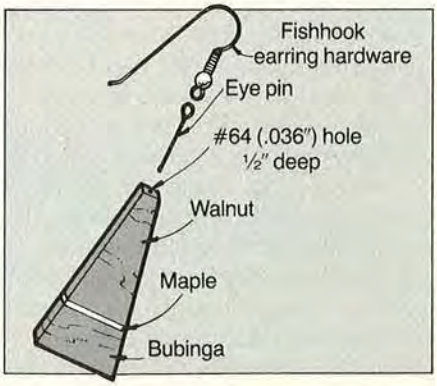
5 Remove the earrings from the handscrew, and separate them. Carefully peel off the tape, and then finish-sand each earring.

6 Before gluing the shafts of the eye pins into the earrings, determine which way the opening of each eye pin should face. For the earring to hang correctly, the fish hook or post may require that the loop of the eye pin (as shown in the drawing *below*) be parallel with the flat surface of the earring.



7 Use a wire cutter to cut the eye-pin shafts to length (the shaft of the eye pin should slide far enough into the hole so that the loop is just next to the top of the earring). Mix the epoxy, and dip the shaft of the eye pin into it. Insert the eye-pin shaft into the hole in the earring. Immediately, wipe off any excess epoxy.

8 Spray or wipe on the finish. Rub gently between coats with steel wool.



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9 Hold a pair of earrings side by side (see the Pair-of-Earrings Drawing) to determine which way the fishhook hardware or posts should be attached (this applies to designs 2, 3, and 4). Use small needle-nose pliers to open the loop of each eye pin. Thread the opened loop through the loop of each fishhook or post. Squeeze the eye-pin loop closed.

BUYING GUIDE

- **Thin stock.** ⅛" bird's-eye maple, catalog no. W9102, order one square foot for $2.95. ⅛" bubinga, catalog no. W9041, order one square foot for $3.50. ⅛" walnut, 5½x18", catalog no. W4601, order one piece for $3.36. Include $2.95 for shipping and handling. Craftsman Wood Service Company, 1735 W. Cortland Ct., Addison, IL 60101, or call 312/629-3100.
- **Drill bits and chuck.** Six #64 (.036") drill bits, catalog no. 15170, $5.95. Miniature adapter chuck for your drill chuck, catalog no. 26107, $5.95. Micro-Mark, Box 5112-272, Clinton, NJ 08809, or call 800/225-1066 to order.
- **Miniature pliers.** Extra fine needle nose with serrated jaws. 4⅞" long. Catalog no. 29103, $12.95. Micro-Mark, address above.
- **Epoxy.** Two-part epoxy, sets in 8 minutes. Two 3-fl.-oz. tubes, catalog no. 15202, $8.95. Micro-Mark, address above.
- **Earring parts.** ¾" eye pins, gold finish, catalog no. 455-11, 30 pieces, 59 cents. Fishhook earring hardware, gold finish, catalog no. 455-78, four pieces, 89 cents. Gold-filled posts, one pair, catalog no. 451-91, 89 cents. Mangelsen's, 3457 South 84th St., Omaha, NE 68124, or call 402/391-6225.

Project Design: James R. Downing
Photographs: Hopkins Associates; Bob Calmer

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all aboard PLAYTIME EXPRESS

Looking for just the right gift for a favorite youngster? If so, you've just struck it rich because this pint-sized plaything will soon be one of that child's favorite possessions. We scaled down the size of the locomotive and cars so that even toddlers can maneuver them easily. And because young "engineers" can sometimes get overly energetic when operating trains, we designed the project to stand up to plenty of playful abuse.

Note: You'll need some thin stock for this project. You can either resaw or plane thicker stock to the correct thickness or special-order it. See the Buying Guide on page 79 for our source.

START WITH THE LOCOMOTIVE

1 To make the locomotive chassis (A), cut ¾" maple to the size listed in the Bill of Materials. Then, drill a 3/32" pilot hole ¼" deep and ¼" from one end for the coupler screw where shown in the Locomotive Exploded-View Drawing.

2 To form the boiler (B), cut two pieces of ¾" maple to 1½x12". Glue and clamp them face to face, with the edges flush. Later, sand the block smooth, and use your router table to rout a ⅜" round-over along the first 3" of the top two edges. Cut a 2⅝" piece from the rounded-over portion of the block, and set aside the remainder for the passenger car and caboose. Now, glue and clamp the boiler flush with the front of the chassis and centered from side to side.

3 Cut the boiler front plate (C) to 2x2½" from ½" maple stock. Cut ½" radii on the top two corners. Sand the boiler front plate smooth, and glue it to the front of the chassis and boiler.

4 Using ⅜" maple, cut the two sides (D), the front (E), and the bottom (F) of the cab to size. Drill a 1¼" "window" in each side where shown in the Side-View Drawing. Then, glue all the cab pieces together as shown in the locomotive Exploded-View Drawing. Sand the edges smooth, and glue the cab to the chassis, directly behind the boiler.

5 Drill a ⅜" hole ½" deep 1" back from the front end of the boiler for the smokestack dowel. Next, mark the location of the three axle holes with a center punch or a 6d nail (see the Side-View Drawing for placement). Then, *carefully* drill a 9/32" hole all the way through the chassis (the indentation will help prevent the bit from wandering when you start the hole).

6 Cut a piece of ½" walnut to 2½x10" for the roof (G). Then, cut a 45° bevel along one end, and cut the roof to finished length (3¼"). Glue the roof to the top of the cab (it should overlap the front by ¼" and each side by ⅝").

7 To form the cowcatcher (H), start by cutting ten pieces of ¼"-thick maple to 2¼x10". Laminate them face to face, removing any squeeze-

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SPECIALS

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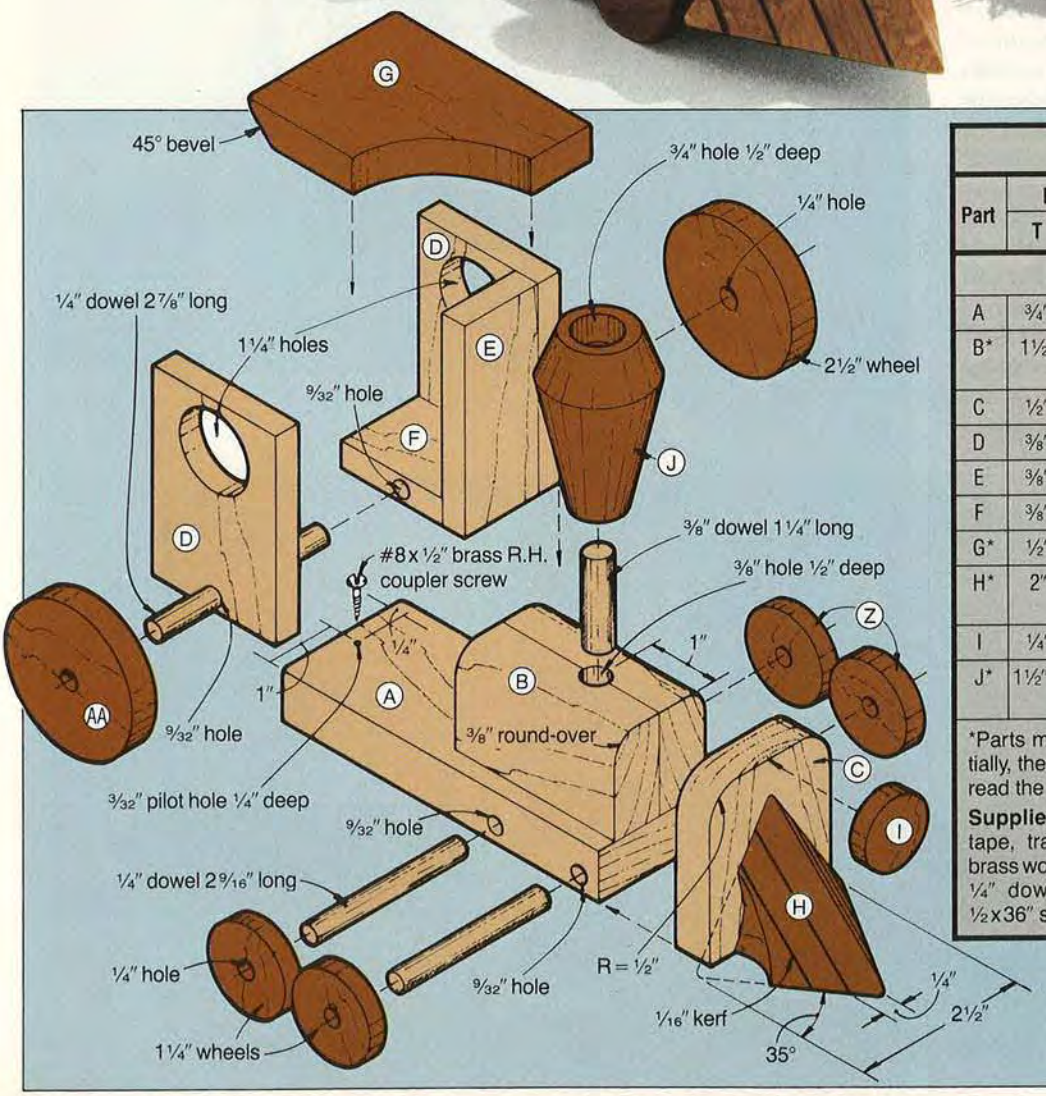


Bill of Materials

Part	Finished Size* T	W	L	Material	Qty.
Locomotive					
A	¾"	2"	5¼"	maple	1
B*	1½"	1½"	2⅝"	maple (laminated)	1
C	½"	2"	2½"	maple	1
D	⅜"	2"	3"	maple	2
E	⅜"	1¼"	3"	maple	1
F	⅜"	1¼"	1⅝"	maple	1
G*	½"	2½"	3¼"	walnut	1
H*	2"	2½"	2"	maple (laminated)	1
I	¼"	1" diameter		walnut	1
J*	1½" diameter		2"	walnut (laminated)	1

*Parts marked with an * are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: masking tape, double-faced tape, tracing paper, #8 x ½" roundhead brass wood screws, 3⁄16" brass flat washers, ¼" dowel, ⅜" dowel, nontoxic finish, ½ x 36" strip of tooling leather

Continued

out after it forms a tough skin. Plane or sand the edges smooth.

8 Referring to the three-step drawing *below*, follow steps 1 and 2 to shape the front of the cowcatcher. Next, clamp the stock in a vise, with the beveled end up, and sand the beveled surfaces smooth. Cut 1/16"-deep accent kerfs with a fine-toothed handsaw along the glue joints on the front of the cowcatcher. Then, follow step 3 to cut the part to its 2" finished length. Glue the cowcatcher in place, centered on the boiler front plate and flush with the bottom of the chassis.

9 Make the headlight (I) by cutting a 1"-diameter plug from 1/4" walnut scrap. If you don't have a plug cutter, rough-cut the part with a band saw or scroll saw, and sand the edges smooth. Glue the headlight to the boiler plate, centered over the cowcatcher and extending 1/2" above the top edge of the boiler plate.

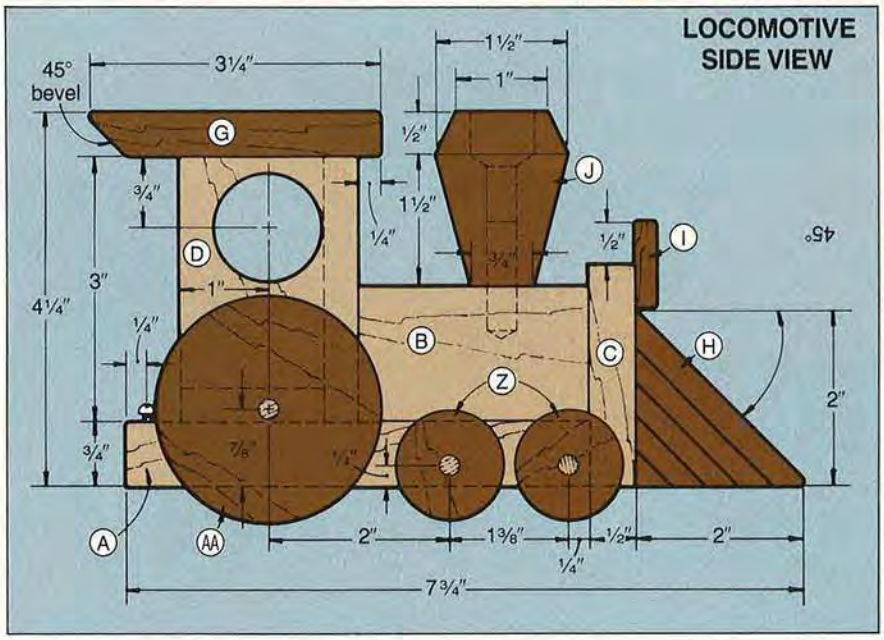
THE SMOKESTACK COMES NEXT

1 To make the smokestack (J), start by laminating two 3/4 x 1 1/2 x 6" pieces of walnut. Trim the ends square, and draw diagonals on one end to find the center. Now, draw a 1 1/2"-diameter circle with a compass on this same end, and clamp the block in your vise. Using the circle as a guide, hand-plane the block to a rough cylinder shape.

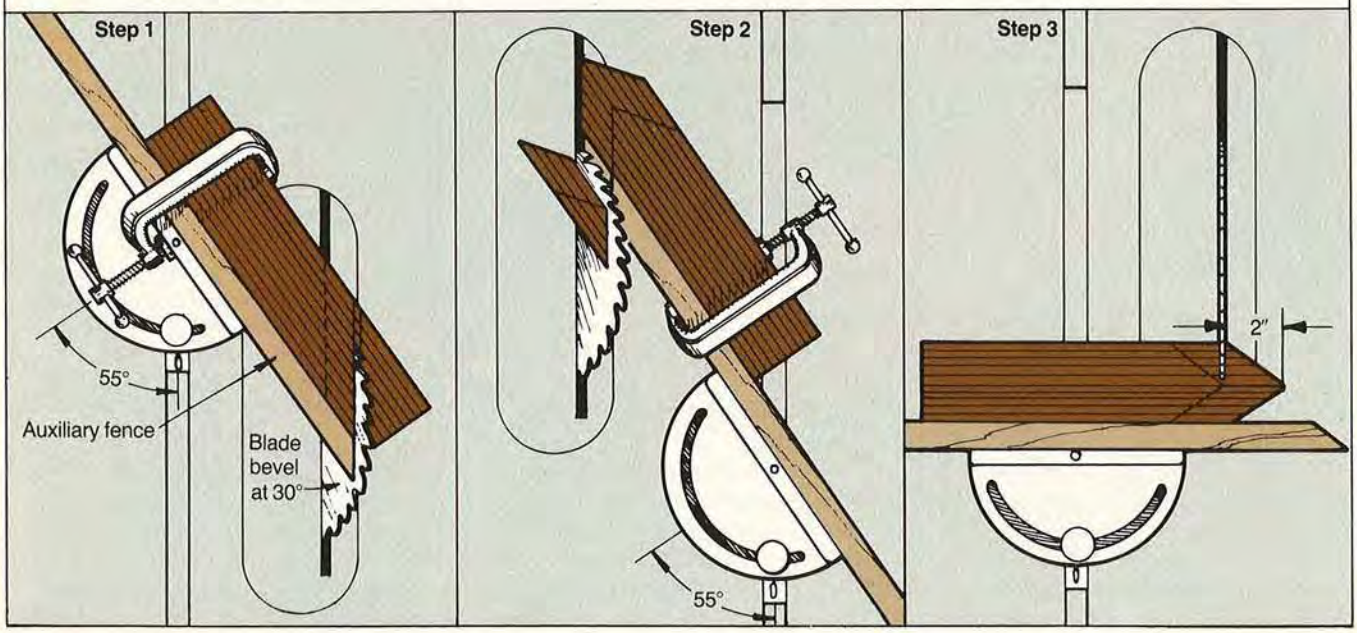
2 Crosscut a piece 2" long from this block to make the turning stock for the smokestack. Use a handscrew to secure the block, and bore a 3/4" hole 1/2" deep in one end (where shown in the Side-View Drawing). Replace the 3/4" bit with a 3/8" bit and drill the hole entirely through the block.

3 Pass a 3/8 x 3" bolt through the block, with its head inside the 3/4" hole, and secure the bolt with a nut. Chuck the protruding end of the bolt in your drill press. (The smokestack will be upside down.)

4 With the drill press running at a medium speed (800-1,000 rpm)



CUTTING THE COWCATCHER



"turn" the wood to shape, using a Surform Plane or wood rasp. Work the tool against the spinning wood as shown in the photo *right*. Shape the smokestack to the dimensions indicated in the Side-View Drawing, and sand it smooth.

5 Remove the smokestack from the drill press. Remove the nut and bolt, and glue the smokestack in place with a ⅜x1¼" dowel.

AND NOW FOR THE RAILCARS

1 Rip and crosscut a piece of ½" maple to 2½x21" for the floors of the coal car, flat car, passenger car, and the caboose. Then, crosscut two pieces (K) to 4½" and two pieces (L) to 5" from the strip.

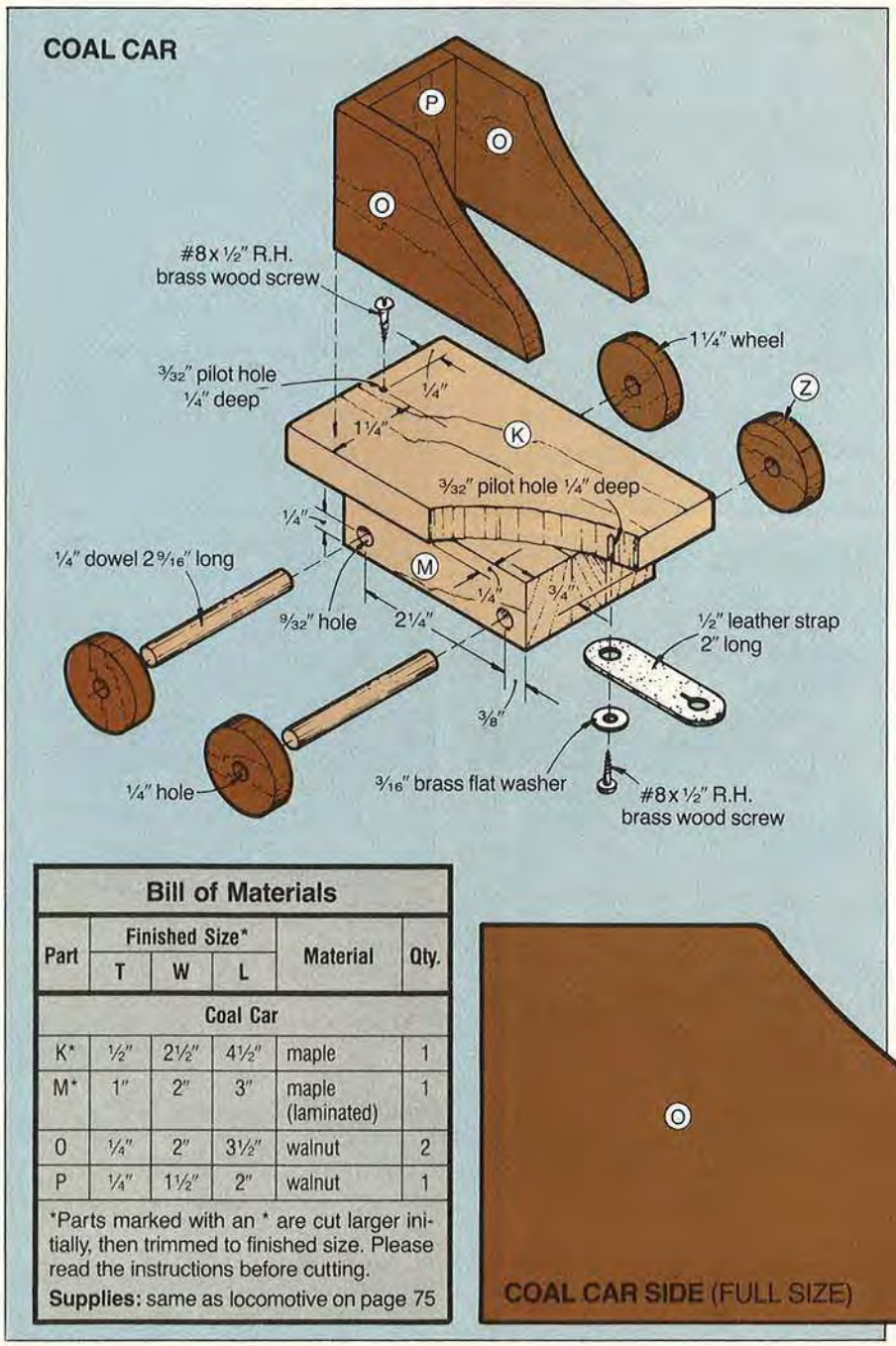
2 Attach a piece of masking tape to all floor parts and label them "coal car," "flat car," etc. Drill 3/32" pilot holes ¼" deep and ¼" from both ends for the coupler screws in the floors (K, L) where shown in the drawings. *Notice* that the front hole for the coupler in the coal car is drilled from the *underside* of the floor.

3 To make the chassis for each car, start by cutting two pieces of ¾" maple to 1x15" and one piece of ½" maple to 1x15". Glue and clamp the three pieces together face to face with the ½" strip sandwiched between the ¾" strips. Scrape off the excess glue, and sand or plane the top and bottom surfaces of the lamination smooth. Cut two pieces (M) 3" long and two pieces (N) 3½" long from the lamination.

4 Drill a 9/32" hole for the wheel axles in each chassis after marking the location of each hole with a center punch.

5 Center each floor over its corresponding chassis (part K to M and part L to N), then glue and clamp the parts together.

6 To construct the coal car, cut the sides (O) and back (P) to the sizes listed in the Bill of Materials. Stick the two sides together face to face using double-faced tape. Use carbon paper to transfer the full-sized side pattern shown *left*, onto the top walnut piece. Cut the sides to shape, sand the contoured edges, and separate, remove the tape. Glue the sides and back together. Next, center and glue this assembly onto the coal car floor (K).

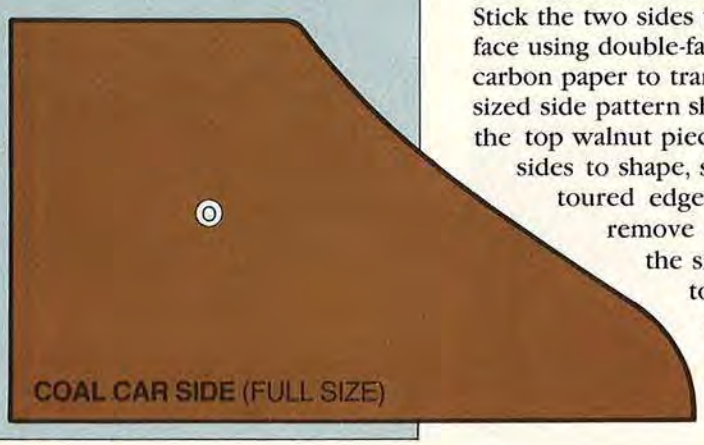


Bill of Materials

Part	Finished Size* T	W	L	Material	Qty.
Coal Car					
K*	½"	2½"	4½"	maple	1
M*	1"	2"	3"	maple (laminated)	1
O	¼"	2"	3½"	walnut	2
P	¼"	1½"	2"	walnut	1

*Parts marked with an * are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: same as locomotive on page 75



Continued

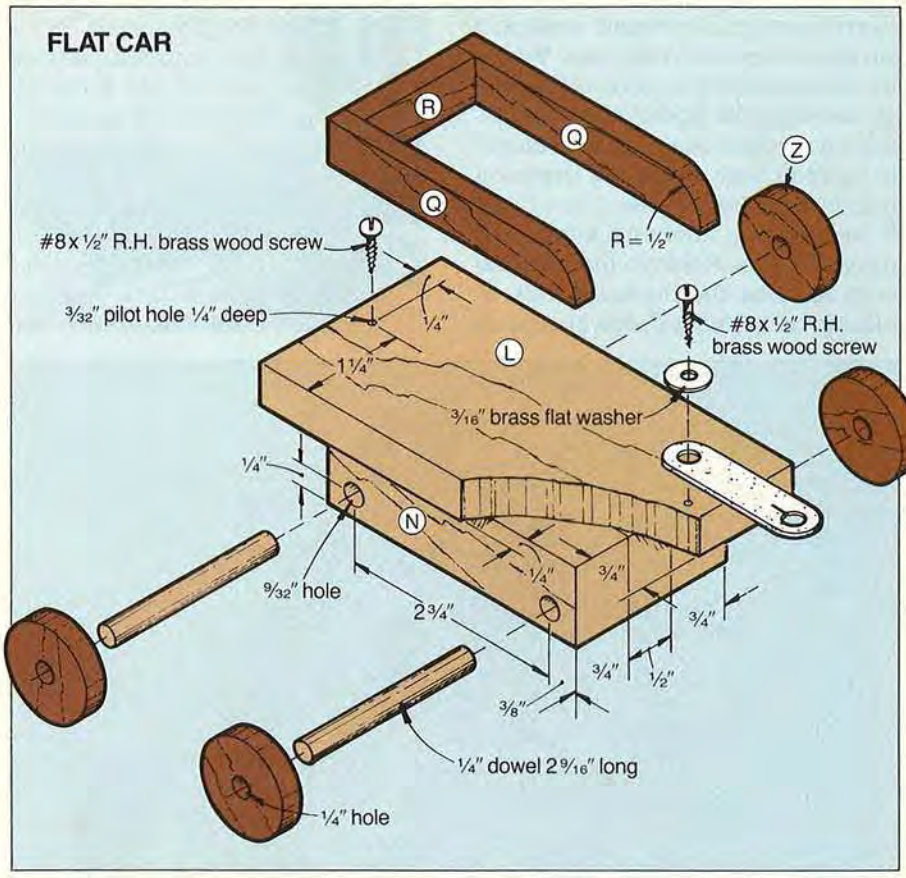
PLAYTIME EXPRESS

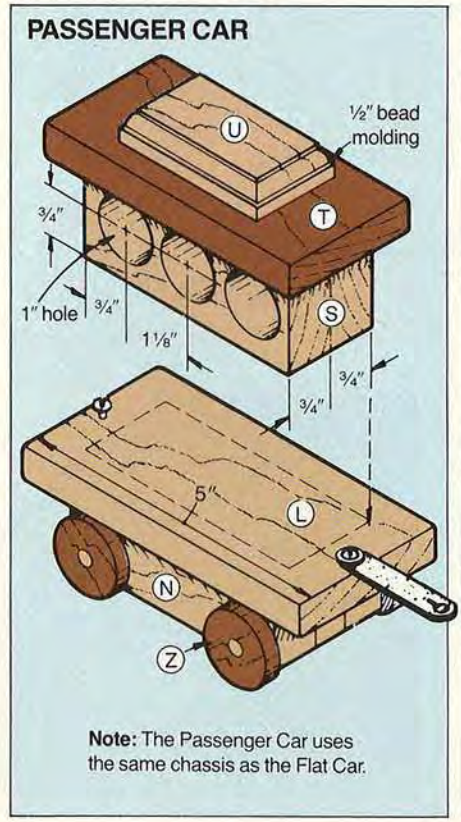
7 Cut the sides (Q) and end (R) to size for the flat car shown at *right*. Cut the front end of each side to shape, and sand smooth. Center the sides and end over the floor of the car, and glue and clamp them in position.

8 To fashion the passenger car, first cut a 3¾"-long car body (S) from the lamination you made earlier for the boiler. Next, drill the three 1" window holes in it (refer to the Passenger-Car Drawing for correct positioning). Cut the roof (T) to size from ½" walnut. Cut the cupola (U) to size from ½" maple. Fit a ½" beading bit in your table-mounted router, and rout a bead along the top edge of the cupola, using a hand-screw to hold the stock as shown in the photo *below*. Center the car body, roof, and cupola over the floor of the car, and glue and clamp the parts together.

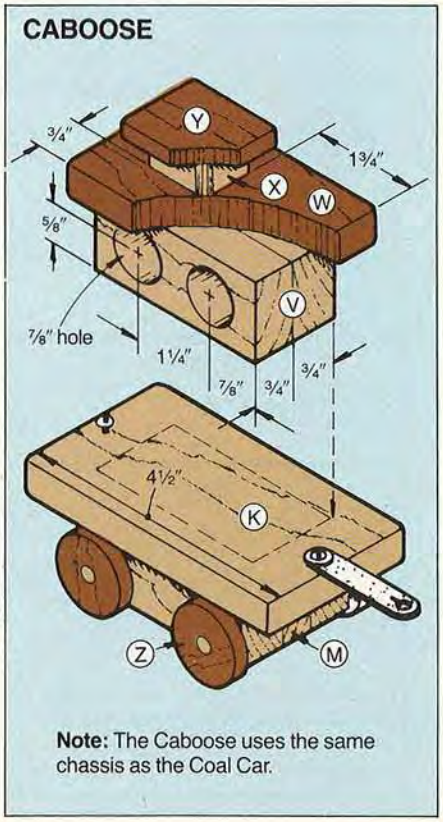
9 For the caboose, cut the car body (V) to size from the remainder of the boiler/passenger car body lamination. Then, drill ⅞" "windows" where shown in the Caboose Drawing, *far right*. Cut the parts for the roof (W) and the cupola (X, Y) to the sizes listed in the Bill of Materials. Center, then glue and clamp the car body to the floor. Attach the roof to the body the same way. Then, glue and clamp the cupola to the roof in the position shown in the Caboose Drawing.

10 You'll need to make twenty 1¼" wheels (Z), and two 2½" wheels (AA) to get this train rolling. If you use a circle cutter like we did (see the Buying Guide at the end of the article for details), first rotate the blade of the circle cutter to make





Note: The Passenger Car uses the same chassis as the Flat Car.



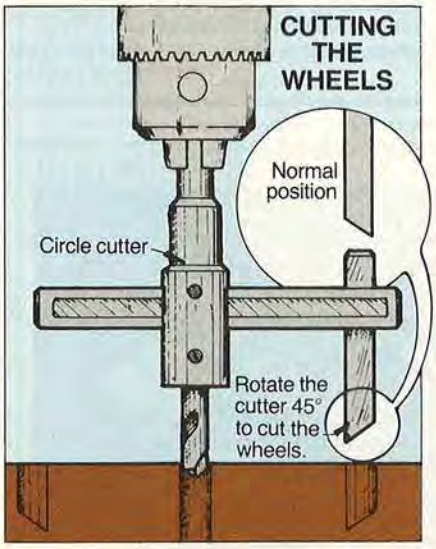
Note: The Caboose uses the same chassis as the Coal Car.

Bill of Materials

Part	Finished Size* T	W	L	Material	Qty.
Flat Car					
L*	½"	2½"	5"	maple	1
N*	1"	2"	3½"	maple (laminated)	1
Q	¼"	½"	3½"	walnut	2
R	¼"	½"	1½"	walnut	1
Passenger Car					
L*	½"	2½"	5"	maple	1
N*	1"	2"	3½"	maple (laminated)	1
S*	1½"	1½"	3¾"	maple (laminated)	1
T	½"	2¼"	4½"	walnut	1
U	½"	1½"	2½"	maple	1
Caboose					
K*	½"	2½"	4½"	maple	1
M*	1"	2"	3"	maple (laminated)	1
V*	1½"	1¼"	3"	maple (laminated)	1
W	½"	2¼"	3¾"	walnut	1
X	½"	¾"	1"	maple	1
Y	¼"	1¼"	1½"	walnut	1
Wheels					
Z	¼"	1¼" diameter		walnut	20
AA	⅜"	2½" diameter		walnut	2

*Parts marked with an * are cut larger initially, then trimmed to finished size. Please read the instructions before cutting.

Supplies: same as locomotive on page 75



an inside cut as shown in the drawing and photo *below*. Then, cut the wheels to size.

11 Cut the axles to length (10 at 2⁹⁄₁₆" and one at 2⅞") from ¼" dowel stock. *Do not* glue the wheels to the axles yet.

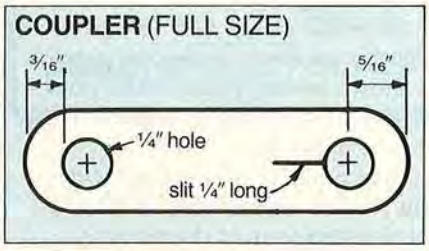
FINISHING AND FINAL ASSEMBLY

1 Finish-sand all surfaces of the train. Sand a slight round-over on all edges and corners for safe, smooth handling.

2 Apply two or more coats of a nontoxic clear finish. (We used salad bowl finish; see the Buying Guide for ordering details.)

3 Glue one wheel on each axle. Wipe off any excess glue, and insert the axles through the holes in the various cars. Being careful not to glue the axle or wheel to the chassis, glue the other wheels onto the other end of each axle. Allow ⅛" play for clearance.

4 Cut the leather couplers to size (see the full-size drawing *below*). Then, punch or drill ¼" holes



spaced where shown. If you don't have a punch, cut a 2" length of ¼" thin-walled brass tubing (available at local hobby stores) and file a sharp bevel around the outside rim of one end. Mount the tube in your drill press and "drill" out the holes. Or, use a ¼" brad point bit (be sure to hold the leather firmly while drilling — it has a tendency to rotate with the bit. Cut a ¼"-long slit next to one of the holes in each coupler. Then, cut each end to shape with a utility knife.

5 Fasten a coupler to the front of each car with a #8x½" brass wood screw and a flat washer. Then, drive a screw of the same size into the pilot holes at the rear of each car.

BUYING GUIDE

- **Circle cutter.** Adjustable ⅞-4". Catalog no. H3511, $8.95. Craftsman Wood Service Co., 1735 W. Cortland Ct., Addison, IL 60101. Or, order by phone: 312/629-3100.
- **Thin stock.** ¼" walnut, catalog no. W9724, $3.30 per square foot, (2 square feet needed). ½" walnut, catalog no. W9726, $5.75 per square foot, (1 square foot needed). ¼" maple, catalog no. W9112, $3.95 per square foot, (2 square feet needed). ⅜" maple, catalog no. W9708, $2.12 per square foot, (1 square foot needed). ½" maple, catalog no. W9709, $2.59 per square foot, (1 square foot needed). Craftsman (address above).
- **Salad bowl finish.** Nontoxic clear finish, catalog no. H5414, $7.25 per quart. Craftsman (address above).
- **Leather strip.** ½x36", Tandy catalog no. 4568, $1.99. Call 800/433-5546, or write Tandy Leather Company, P.O. Box 2934, Fort Worth, TX 76113, for the store nearest you.

Produced by Marlen Kemmet; Yosh Sugiyama
Project Design and Illustrations: Kim Downing; Bill Zaun
Photographs: Hopkins Associates; Jim Kascoutas

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H·O·L·I·D·A·Y SPECIALS FROM·THE·SHOP

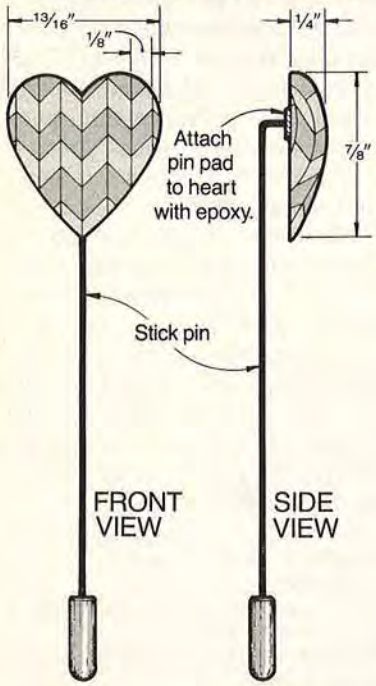
SWEETHEART STICKPIN

Out-of-the-ordinary jewelry always makes a welcome gift. This pin, laminated with woods from your scrap box, is a sweetheart to make, too — once you know how.

1 Rip ⅛"-wide strips from the edges of ¾"-thick boards 8" long to acquire the number and types of wood listed in the Bill of Materials, or choose your own combination. Glue and clamp the strips together, alternating the wood types, as shown in step one of the photo *below.* Scrape off the excess glue.
2 Fit your band saw with a miter gauge set at 45° from center and a ¼" or larger blade having eight or more teeth per inch. Then, cut eight ⅛"-thick slices (see one slice in step two of the photo *below).* Tape a piece of 80-grit sandpaper to a flat surface, and hand-sand both sides of each slice.
3 Glue and clamp two ⅛" slices together to form a chevron pattern as shown in step three of the photo. Repeat this process to make a total of four patterns.
4 Glue and clamp the four chevron patterns together to form the block (step four of the photo). Later, sand the top and bottom faces of the block smooth.
5 Position the fence on your band saw ¼" from the blade. Using a push block, cut ¼"-thick slabs from the laminated block. Then, as shown in step five of the photo, make a template, and draw a heart outline on each slab (use the full-sized Front View in the *lower left-hand corner,* to make the template).
6 Carefully cut the hearts to shape with a scroll saw or band saw.
7 Round-over the top edge with a small rasp or sandpaper. As an option, use a power tool, such as a Dremel fitted with a ⅜" sanding drum. Finish-sand each heart.
8 Glue the pad of the stickpin to the back of the heart with epoxy. Rub in several coats of a penetrating oil finish, and wipe off the excess.

Bill of Materials					
Part	Initial Size of Strips			Material	Qty.
	T	W	L		
A	¾"	⅛"	8"	walnut	4
B	¾"	⅛"	8"	maple	2
C	¾"	⅛"	8"	oak	1
Supplies: masking tape, epoxy, finish					

STICK PIN (Shown full size)

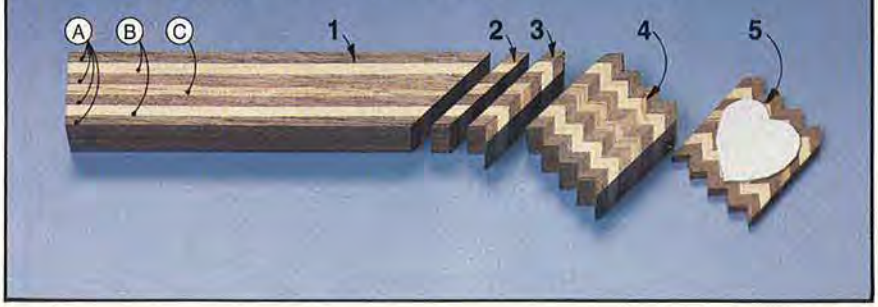


BUYING GUIDE

• **Stickpins.** Hamilton gold finish, 2¾" long with bullet type clutch. Try your local hobby store, or order them for 89 cents per half dozen, plus 75 cents shipping from Mangelsen's, 3457 South 84th St., Omaha, NE 68124, or call 800/391-6225.

Project Design: Paul Franzmeier
Photographs: Jim Kascoutas
Illustration: Yosh Sugiyama

LAMINATION AND CUTTING SEQUENCE



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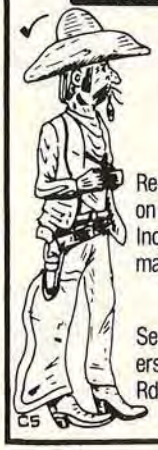

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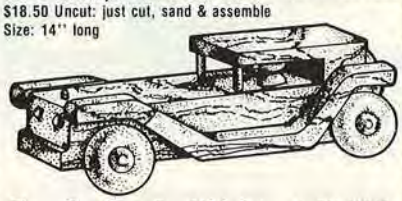

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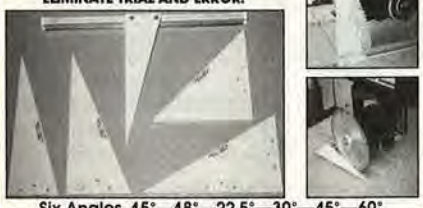

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TURNING TOOLS BUYING GUIDE

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See related article on page 60

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Anglo-American Enterprises Corporation
P.O. Box 24
Somerdale, NJ 08083
Tools: Marples, Sorby, Mifer
Catalog: Free

Buck Bros.
P.O. Box 192
Millbury, MA 01527
Tools: Buck
Catalog: Free

Craft Supplies USA
1644 S. State Street
Provo, UT 84601
Tools: Henry Taylor (Diamic), Sorby (unhandled)
Catalog: $2 (refundable with order)

The Fine Tool Shops, Inc.
20 Backus Avenue
Box 1262
Danbury, CT 06810
Tools: Sorby
Catalog: Free

Freud Inc.
P.O. Box 7187
218 Feld Avenue
High Point, NC 27264
Tools: Freud
Catalog: Free

Garrett Wade Company
161 Avenue of the Americas
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Tools: Henry Taylor (Diamic), Sorby, Japanese (laminated), Luna
Catalog: $4

Robert Larson Co.
82 Dorman Avenue
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Tools: Hirsch, Sorby
Referrals to local dealers

Lee Valley Tools, Ltd.
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Ottawa, Ontario
K2B8H6 Canada
Tools: Sorby
Catalog and Mailing List $5

Mifer Tools USA, Inc.
P.O. Box 5515
Clark, NJ 07066
Tools: Mifer
Catalog: Free

Frank Paxton Lumber Co.
9229 Ward Parkway, Suite 350
Kansas City, MO 64114
Tools: Hirsch, Lemco, Sorby, Buck

Treen Heritage, Ltd.
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Merrickville, Ontario
K0G1N0 Canada
Tools: Henry Taylor (Diamic)
Catalog: $1

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P.O. Box 4000
Woburn, MA 01888
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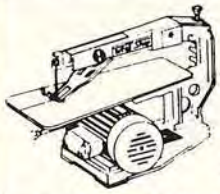

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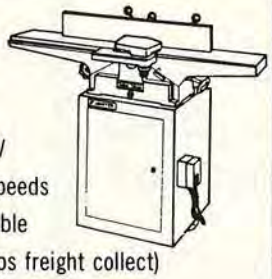

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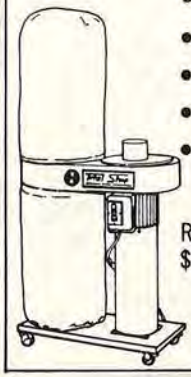

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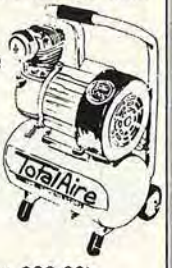

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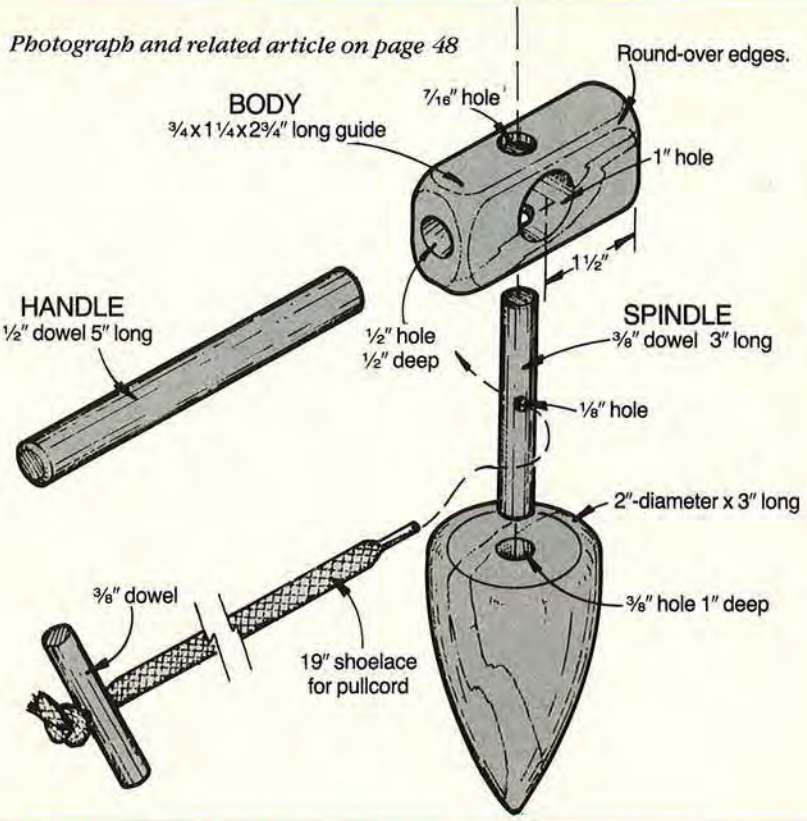
SPINDLE TOP

Photograph and related article on page 48

Sometimes called mountain tops, spindle tops represent an improvement on a simpler design. The guide on its handle steadies the top as it begins to spin, then, it's lifted when the top takes off. It makes even big and otherwise unwieldy tops easier to spin, but it's best to stick with the size shown for your first one. After that, you can experiment.

Use any hardwood, or even pine, for the handle and guide. The top itself should be of hard maple to withstand abuse. You can turn the top on a lath or shape it on a drill press. Either way, make sure that the hole for the spindle lines up exactly on the centerline of the body or the top will be out of balance and won't spin. Decorate the top with a colorful stripe or two for a rotating design that adds flash and excitement as the top spins.



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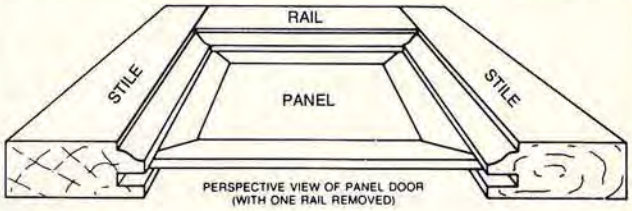

PERSPECTIVE VIEW OF PANEL DOOR (WITH ONE RAIL REMOVED)

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SUPPLIED WITH BALL BEARING
1/2" SHANK
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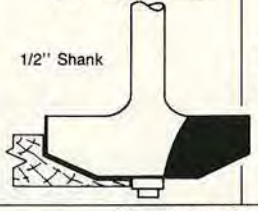

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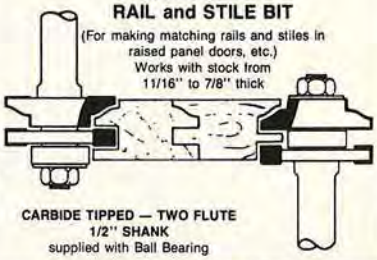

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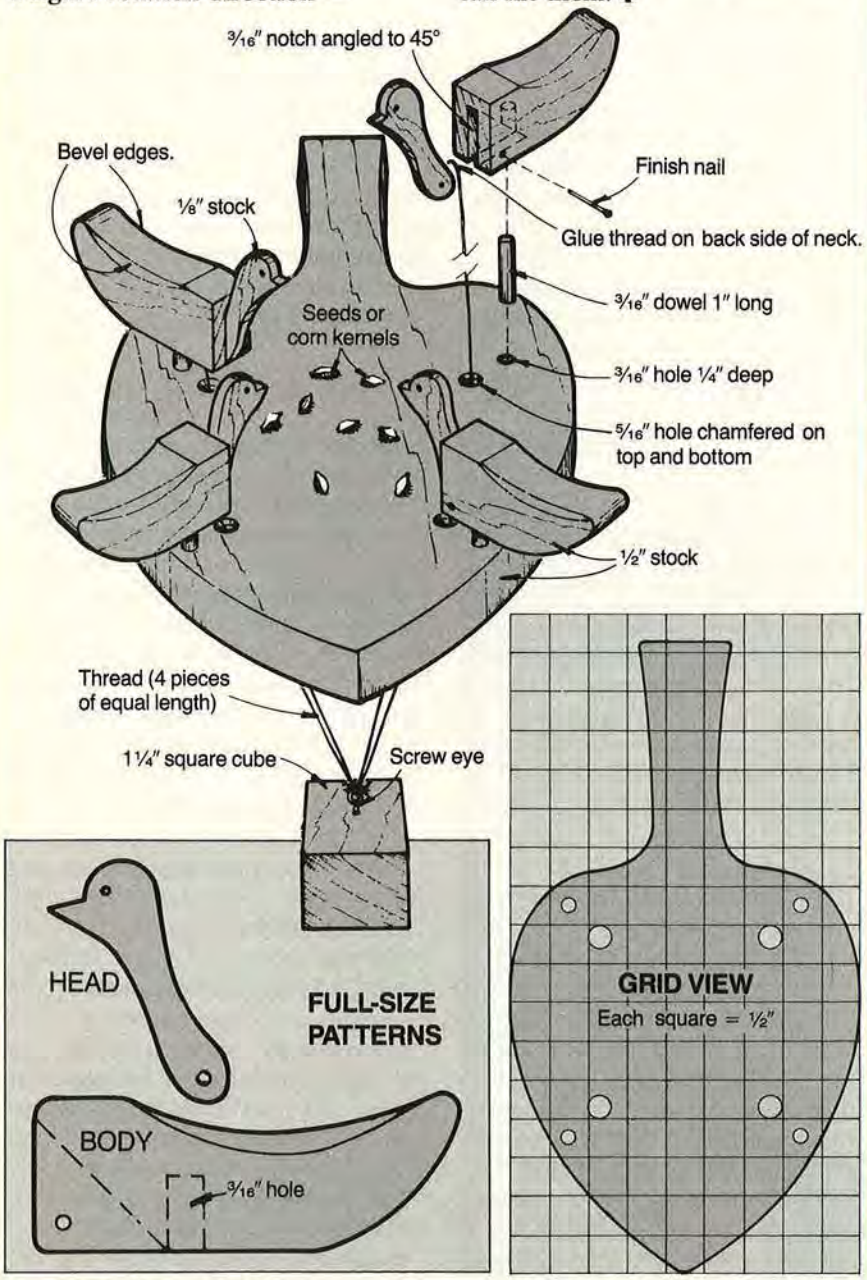
CHICKENS PECKING

Photograph and related article on page 51

This toy was popular in some middle European countries before it was brought to America. In Europe, the chickens were brightly painted. Here, however, they were always made quite plain, reflecting simpler tastes, and quite possibly, lack of bright paint.

You can dictate these chickens' pecking order by changing the weight's rotation direction — clockwise, counterclockwise, back and forth. It's clever engineering that keeps children and adults amused.

In assembly, glue the thread to the back of each chicken's neck *before* inserting it into the body and fastening in place with a finishing nail. And make sure you don't glue down the seeds or kernels where the pecking chickens can hit them!



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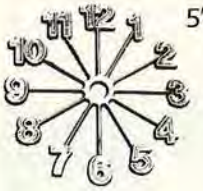

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See related article on page 57

Arroyo Hardwoods
2585 Nina St.
Pasadena, CA 91107
818/304-0021
Cocobolo, tulipwood, lilac burl, pink ivory, and vera wood are but a few of the bowl blanks this company handles. Arroyo Hardwoods has a full line of domestic and imported woods for the turner to choose from.

Berea Hardwoods Co.
125 Jacqueline Dr.
Berea, OH 44017
216/243-4452
Berea Hardwoods carries black swamp stumps, which resemble ostrich leather, and she oak, which resembles quartered oak with prominent red rays. They also carry bloodwood from Brazil and jarrah burls from Australia. James Heusinger, the owner, states that he actively seeks out extremely unusual turning woods in addition to his inventory of the more common species.

Cal Oak Lumber Co.
1000 Cal Oak Rd.
P.O. Box 689
Oroville, CA 95965
916/534-1426
This outfit, which prepares over 3 million board feet of regular lumber yearly, also sells oak and cottonwood burls up to 40" in diameter and from 3" to 4" thick.

Craft Supplies USA
1644 South State St.
Provo, Utah 84601
801/373-0917
A few of the types of turning stock sold by Craft Supplies includes wild lilac, myrtlewood burl, box elder, and claro walnut. The owner stocks burls from the size of a grapefruit to several feet across. If you're in the area, take a stroll behind the Craft Supplies store; it is a virtual burl supermarket. In addition, Craft Supplies specializes in woodturning tools and lathe accessories.

Gilmer Wood Co.
2211 NW St. Helens Rd.
Portland, OR 97210
503/274-1271
Gilmer Wood Company has a list of turning stock that includes alpine birch burl logs, bubinga, myrtle wood and madrone burls, padauk, and pearwood to name just a few. Myles Gilmer, owner, reports that he has 70,000-80,000 lbs. of burl on hand.

Joshua's Trees
113 North Seventh
Brooklyn, NY 11211
718/387-9016
Wood dealer Joshua Hoffman, travels from Vermont to Nigeria to select his woods. Joshua's Trees list includes spalted sycamore and beech, along with bird's-eye maple and several exotics.

Johnson Wood Products
Route 1
Strawberry Point, IA 52076
319/933-4930 or 319/933-6504
Johnson Wood Products has a large variety of bowl blanks in various sizes, with prices ranging from $.60 to $23 per blank. Fancy-figured walnut and spalted maple blanks run double the regular price. You can purchase butternut, hackberry, oak, red elm, honey locust, cherry, and occasional quantities of spalted maple through this family-run business.

Native American Hardwoods Ltd.
Box 6484
West Valley, NY 14171
716/942-6631
This company carries small, medium, and large blocks of spalted maple and beech. The blocks contain lots of variegated color and spalt lines. Peter Sieling, General Manager, recommends rough turning the stock to a ¾-1" wall thickness, coating the bowl with paraffin, letting it sit for 6-8 weeks, and finally remounting the stock and finish-turning the piece.

Paradise Farm Wood Prod.
Wesley, ME 04686
207/255-3711
Greg Kaminsky of Paradise Farm travels yearly to an area near the mouth of the Amazon to select trees for his inventory. Paradise Farm stocks Amazon rosewood, leopard wood, and pernambuco.

Reliance Ind. Inc.
P.O. Box 129
Richland, IA 52585
319/456-6030
Reliance Industries specializes in osage orange, also called "hedge apple" in many parts of the country. The heartwood, often saffron and gold streaked, will be enclosed in white sapwood. The color slowly mellows with age.

Shir-Lee Manzanita Ranch
P.O. Box 6
Potrero, CA 92063
619/478-5706
Manzanita burl, part of the intricate root system of the manzanita bush, comprises the sole stock of this company. Manzanita grows in clusters at elevations of 4,000 to 6,000 feet in southern California and Baja Peninsula.

Tropical Timber Corp.
3125 Van Water
Portland, OR 97222
503/654-5349
The list of exotics carried by Tropical Timber includes cocobolo and lignum vitae. You'll want your tools sharp when cutting lignum vitae, the hardest and heaviest wood known with a density almost equal to that of iron.

Weird Wood
P.O. Box 190
Chester, VT 05143
802/875-3535
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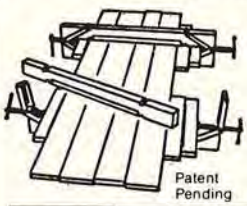

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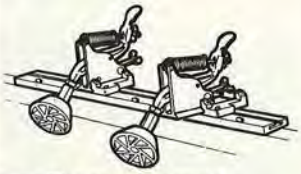

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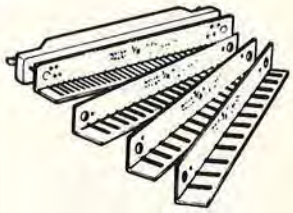

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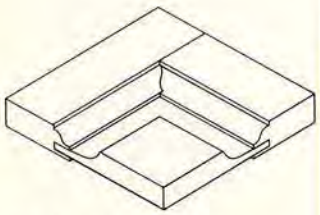

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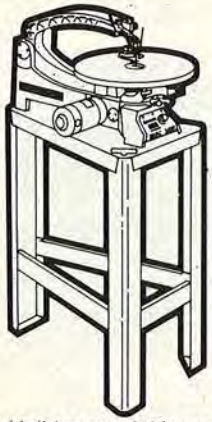

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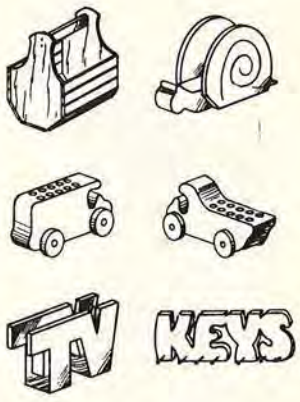

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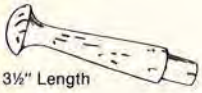

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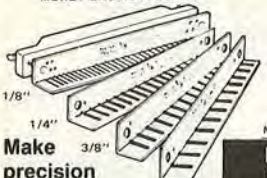

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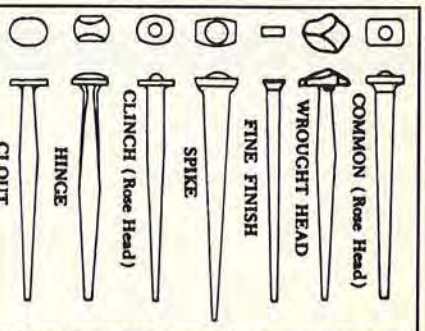

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SHOP GEOMETRY

Continued from page 54

DRAWING POLYGONS

A polygon has more than four equal sides. Pentagons, hexagons, and octagons all belong in the polygon family. And, while you can learn specific ways to draw hexagons and octagons, this universal method allows you to draw them all.

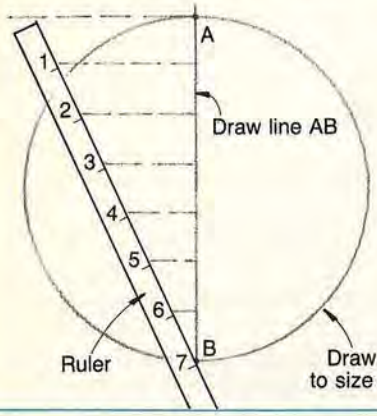
Step 1. Draw a circle large enough to enclose the size polygon you want. Then divide the diameter into as many equal spaces as your polygon will have sides, *below*. Our circle's diameter is 3½" and we wanted seven sides, so we made a mark every ½" (½ x 7 = 3½).

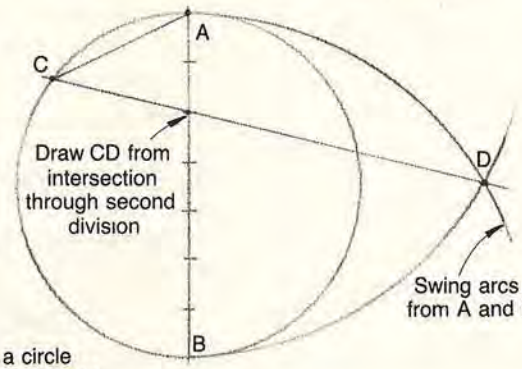
Step 2. Set the legs of a compass or the distance between trammel points to the circle's diameter. Swing intersecting arcs from *A* and *B*, as shown, *below*.

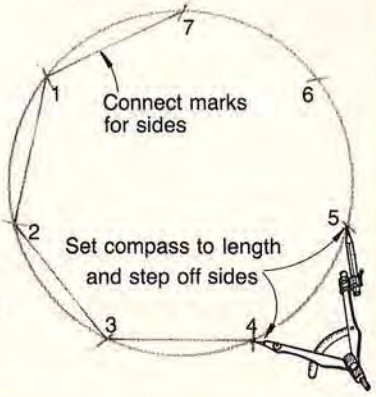
Step 3. From the intersection of the arcs draw line *CD* through the *second* of your divisions along the circle's diameter.

Step 4. Where *CD* intersects the circumference near *C*, draw a line to *A*. This will be the length of each of your polygon's sides. Reset your compass or trammel points to match this length, and walk off and mark the divisions around the circumference.

Step 5. Now connect all marks with straight lines.







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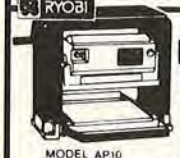

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Print this article

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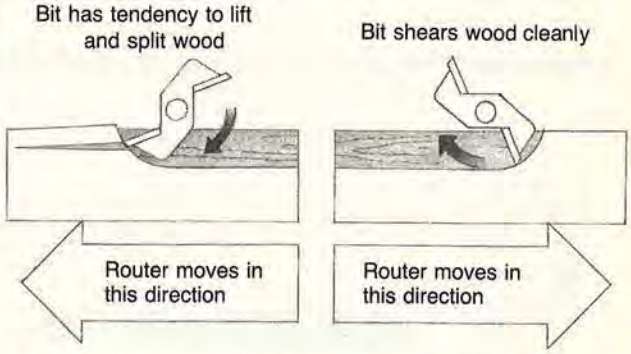
ROUTING BACKWARD

Q. *On my last project I ruined half again as much zebrawood as it took to complete the project. Do you have any suggestions for routing zebrawood?*

— Carl Ragsdale, Houston, Tex.

A. Some woods just naturally split or chip when routed; other woods are hard to work when they're extremely dry. In both cases, one solution is "climb cutting": passing the router bit across the wood backward.

This isn't a technique you'll want to use all the time, because the bit will have a tendency to climb up the workpiece surface and pull the router out of control. However, once you know how your router will react to your operating it backward, you can stay on top of the situation.


NORMAL ROUTER METHOD
Bit has tendency to lift and split wood
"CLIMB CUTTING" METHOD
Bit shears wood cleanly
Router moves in this direction
Router moves in this direction

To start climb cutting, make sure you have the workpiece securely clamped. With a firm grip on your router, run the bit across the edge in several light passes, until the cut is complete. For profiles that permit, start with a shallow cut — say one-third of the full depth — lowering the bit after each pass.

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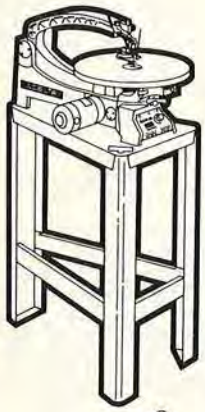

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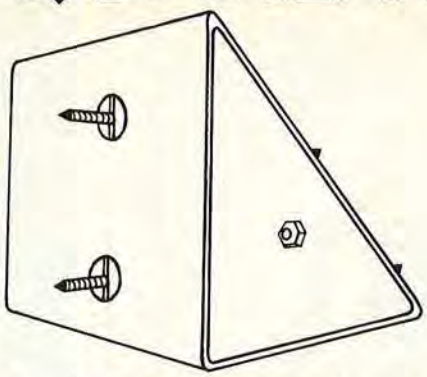

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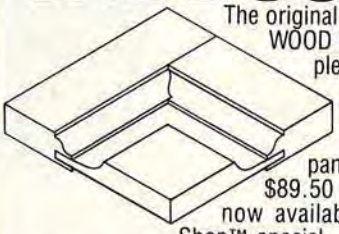

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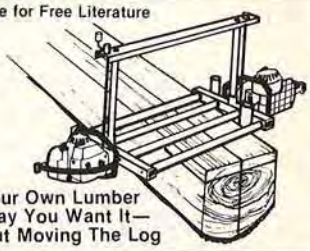

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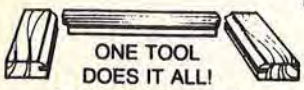

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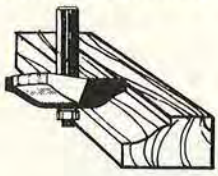

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LATHE CHUCKS
WHICH IS BEST FOR YOU?

In our faceplate techniques article that begins on page 38, we show and discuss two good ways to mount stock on a lathe — the direct connect method and the auxiliary faceplate method. These have served woodturners well for countless years. But today, manufacturers offer you yet another mounting option — the lathe chuck.

Should you add one of these costly devices to your turning tool kit? Will a lathe chuck make you a better turner? Which one should you buy?

For answers, we talked to some of the folks who sell and use lathe chucks. Here's what we found out.

WHAT ADVANTAGES DO LATHE CHUCKS OFFER?

Have you ever examined the bottom of a bowl made by an experienced turner and wondered how the heck he or she got it so thin? Most likely the turner first shaped the outside of the bowl between centers or with an inexpensive (under $30) pin chuck, then switched to a lathe chuck for the inside work. Systems vary, but lathe chucks offer a way to turn thin-bottomed bowls with no faceplate screw holes.

We investigated three popular models — the Three-Jaw Chuck, the Sorby Precision Combination Chuck, and the Delta Super Chuck.

THREE-JAW CHUCK

Darrell Nish, president of Craft Supplies U.S.A., grew up with wood shavings in his pants cuffs. His father, Dale, is one of the country's best-known woodturning teachers and author of several turning books.

Darrell especially likes the Three-Jaw Chuck shown *top right,* on this page. It's a heavy beast (nearly 9 pounds), made in China, and expensive (list $189.98). Nevertheless, you'll find a Three-Jaw Chuck in many shops.

Experienced turners love the Three-Jaw Chuck's speedy mounting system, but it's not for beginners.

To use a Three-Jaw Chuck you turn a round tenon or plug on the outside bottom of the bowl, demount the bowl, and lock the chuck onto the lathe's headstock. The self-centering jaws grip any plug up to 4½" in diameter.

"It's the most versatile chuck there is," Nish says. "Professional turners like the Three-Jaw Chuck for its speed, but it's not for beginners. You need a lot of finesse."

For the average turner, Darrell recommends the Sorby Precision

The Precision Combination Chuck precisely holds the workpiece in a multitude of ways.

Combination Chuck shown *above.* Because this one is cylindrical in shape, a slip needn't result in disaster.

Continued

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BUYMANSHIP BASICS

LATHE CHUCKS

Continued from page 103

PRECISION COMBINATION CHUCK

Made by the Sorby house in England, this chuck is an improved model of an older design, the six-in-one chuck. Nish believes the Precision Combination Chuck out-performs the six-in-one version in critical alignment capabilities. Computer designed and manufactured, the improved chuck sells for around $100.

As its name implies, the Precision Combination Chuck system offers several mounting methods — expanding collet chuck, split ring chuck, screw chuck, cup chuck, pin chuck, and ring chuck. Add to this the accessories available, and you can use the Precision Combination Chuck 30 different ways.

Most turners give the expanding collet (internal grip) a heavy workout. The collet spreads to grasp a shallow dovetail recess in the bottom of the bowl. You'll especially appreciate the expanding collet when you need to quickly rechuck pieces without worrying about losing center — a blessing when you work green woods.

Be warned, though, that the shallow dovetail recess — just 3/16" deep — must be accurately turned. Otherwise, you could find yourself looking around for your lathe's faceplate.

And more words of caution: The expanding collet works like a mini wood splitter that can rip apart the bases of blanks, especially softwood and smaller blanks.

We rang up Tony Walker, a Sorby marketing manager in Sheffield, England. "Accuracy is its greatest virtue," he says, "and flexibility is another important selling point. I can't think of any work the Precision Combination Chuck couldn't hold efficiently by one means or another. It's very

Continued on page 106

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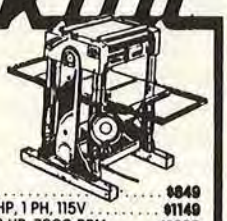

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BUYMANSHIP BASICS

LATHE CHUCKS

Continued from page 104

difficult to figure out how this product could be improved."

DELTA SUPER CHUCK

The Delta Super Chuck system includes two chucks, two cutters, a backing plate, and wrenches.

We also checked out the Delta Super Chuck shown *above,* an Australian-made expanding collet system that lists for about $120.

Unlike the Three-Jaw or Precision Combination Chuck, you don't have to mess around with a pin chuck or turning the outside of the blank between centers first.

What's more, the recess for holding the stock is a snap to drill with the Delta system. With a drill press you bore a 5/16"-deep recess into the base of the bowl blank, using either a 50-mm (2-inch) or 75-mm (3-inch) bit (both of which are included with the Delta system). Then, you thread the matching collet to the back plate, tighten the assembled parts, and away you go! The system is fast and clean, and especially good with green lumber.

Chett Ray, product manager of Woodworker's Supply of New Mexico, likes nothing better than to turn four or five blanks on a Sunday morning, and the chuck he favors is the Delta Super Chuck.

"I don't think you can ever outgrow that chuck," he says. "The more you use it, the more you appreciate it."

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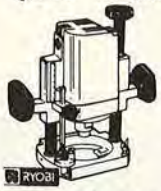

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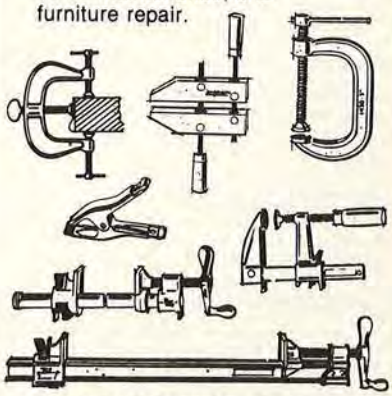

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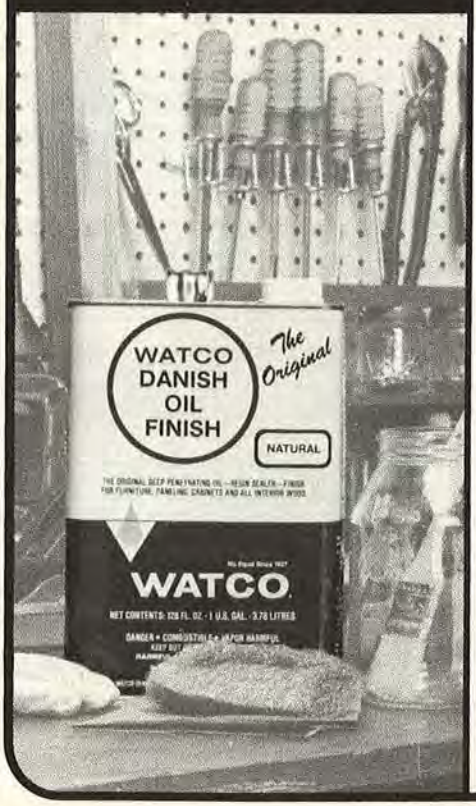

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WOODWORKERS CATALOG — More than a catalog — it's one of the best sources for quality woodworking tools. You'll find everything from bit braces to wood borers, from saws to sharpening stones. Every product is sold satisfaction guaranteed. WOODCRAFT SUPPLY CORP. Free *Circle No. 955.*

WOODWORKERS SUPPLY — Offers high quality tools and supplies for skilled, amateur, and professional woodworkers. Our complete catalog includes machinery, hand tools, plans, router bits, shaper cutters, wood specialities, and more. For your two year subscription send to WOODWORKERS SUPPLY OF NEW MEXICO. $2.00. *Circle No. 975.*

WOODWORKING MACHINERY CATALOG — Workbench Tool Co. is now offering the Powermatic 26 spindle shaper, 3 hp., 1 ph., ½ to ¾ in. spindles, reversing switch for only $1625 FOB. Send for catalog. WORKBENCH TOOL CO. $2.00. *Circle No. 985.*

IS THIS THE WORLD'S BEST JOINER-PLANER? — We think so and invite you to take a closer look! MiniMax's new FS-35 joiner-planer combines industrial quality with an affordable price that will appeal to professionals and amateurs alike. THE XYLOPHILES CO. $1.00. *Circle No. 994.*

KITS

ANTIQUE REPRODUCTION WOODEN TELEPHONES — Dakota Woodworks is the country's largest manufacturer of antique reproduction wooden telephones. Kits available in two skill levels, one with plans and hardware, one with precut oak cabinetry and hardware. All hardware is solid brass. Both kits include complete solid-state electronics package and detailed instructions. Send for four-color 12-page catalog. DAKOTA WOODWORKS. $2.00. *Circle No. 1020.*

DO-IT-YOURSELF GRANDFATHER CLOCK KITS — Direct from world's largest manufacturer of grandfather clock kits. Prices starting at under $280 including West German Westminster chiming movement. Choose from black walnut, cherry, and oak. Other quality heirloom kits also available. Send for brochure. EMPEROR CLOCK CO. 50¢. *Circle No. 1030.*

QUALITY CLOCK KITS AND PLANS — Handmade and semi-assembled of carefully selected ¾ in. cherry, oak, or walnut with beveled glass. Or build from "scratch" using our detailed plans and trim pieces. Choice of quality movements. Established in 1916. KUEMPEL CHIME CLOCK WORKS. $2.00. *Circle No. 1050.*

WOODEN SHIP MODELS — Discover the world's hobby — building fine-quality, historic wooden ship models. Described are true-to-life scale replicas, lifelike in every detail. A 64-page color catalog introduces you to this fascinating hobby. MODEL EXPO, INC. $1.00 (Refunded with first order). *Circle No. 1060.*

CLOCK COMPONENTS — We feature battery, pendulum, and chime quartz movements of all types: Urgos, Hermle, Grandmother, Grandfather cable drive and chain drive, keywind movements of all types. 400-day clocks, music box movements, flat and benzel type dials — plus a vast assortment of weather instruments. Hundreds of clock items. Very competitive. 75-page catalog. NEWPORT ENTERPRISES. Free. *Circle No. 1065.*

CLOCK BUILDERS — New 1986-87 catalog with everything you will need for building that family heirloom. Products include: 40 clock plans, mechanical and quartz clock movements from nine tube Grandfather to four melody quartz battery movements, dials, hardware, and all component parts related to clock building. Quantity prices available. Price of catalog refunded with first $25.00 order. TURNCRAFT CLOCK CO. $3.00. *Circle No. 1085.*

SOLID WOOD CLOCK KITS — Full-color catalog of beautiful, easy-to-make clocks. Grandfather, mantel, and wall clocks. All solid wood with solid brass pre-assembled movements. All parts hand-cut for perfect assembly even by beginners. VIKING CLOCK CO. 50¢. *Circle No. 1090.*

PUBLICATIONS

THE WOODWRIGHT'S WORKBOOK — The latest book by America's favorite woodwright, Roy Underhill. Includes illustrated plans for projects from his 1986-87 TV series plus popular projects from past shows. Roy returns to PBS this Oct. with a new 13-wk. series of "The Woodwright Shop." Write for information on his new book & 2 previous books. UNIV. OF NO. CAROLINA PRESS. Free. *Circle No. 1165.*

SHOP ACCESSORIES

MAKE WOODEN TOYS — Whirligigs, doll houses, swing sets, classic autos, furniture and crafts with our plans, kits, parts, and supplies. For all skill levels. Also parts (toy, craft, game, and furniture) and dimensional lumber in maple, oak, walnut, and cherry along with specialty brass parts, tools, books, organizers and finishes. Send for color catalog subscription. CHERRY TREE TOYS, INC. $1.00. *Circle No. 1220.*

UNIQUE, VERSATILE TOOL AND PARTS STORAGE SYSTEM — features tool panels, cabinets, and workbench attachments to safely store and organize your valuable hand and power tools and small parts. This very functional system offers inter-changeable tool hooks, bins, and shelves to let you custom-tailor your work area. Ideal for woodworking and hobby applications. CONCEPT 2001, INC. Free. *Circle No. 1225.*

RIPSTRATE SAVES FINGERS — for table saw and radial arm saw users. Brochure describes the RIPSTRATE and shows how it gives straighter cuts, speeds, the work, prevents kickbacks, and keeps hands away from the blade. FISHER HILL PRODUCTS. 25¢. *Circle No. 1235.*

EASY DOES IT — with HTC'S powe: tool accessories. Discover many unique items, designed only with you, the dedicated woodworker, in mind. Make your machinery safer, increase the working area of your shop and accomplish nearly impossible tasks easily, quickly, accurately. Full-line catalog and price list. HTC PRODUCTS, INC. Free. *Circle No. 1245.*

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PROFESSIONAL SANDING EQUIPMENT — Sand-Rite's Brush Head sands mouldings and intricate carvings without losing detail or shape of the part. Pneumatic drum gives quick and excellent results on contoured shaped parts. Everything we sell is industrial quality. Send for brochure. SAND-RITE. Free. *Circle No. 1275.*

THE PERFECT SET-UP — Set of six large angles — 15°,18°, 22.5°, 30°, 45°, and 60°, with attaching bar for setting miter & bevel on radial arm saws. A precision cut every time. Many uses in the shop or home. Constructed of durable plastic; will not damage blade. A must for every shop. Patent pending. Send for literature. ROBERT S. SMITH, INC. $1.00. *Circle No. 1279.*

FREE: HOW TO SAVE TIME AND MATERIAL — Work with confidence and control. SHOPHELPER Safety Guides provide stability, to help eliminate binding, chatter, and kickback. With an extra pair of hands from SHOPHELPER you can hold work firmly on table and radial saws, shapers, band saws, and others. Complete information from WESTERN COMMERCIAL PRODUCTS. Free. *Circle No. 1290.*

ROUTER BITS AND SAWBLADES

CARBIDE TIPPED ROUTER BITS AND SHAPER CUTTERS — Over 200 router bits and shaper cutters displayed in catalog featuring 6 piece cabinet sets, 3 piece ½ in.shank router bit panel raising system, and 3 wing industrial shaper cutters. Shaper cutters available in ½ in. through 1-¼ in. bore with bushings. Router bits offered in ¼ in. and ½ in. shank. CASCADE PRECISION TOOL CO. $1.00. *Circle No. 1315.*

HARDWARE/WOOD PARTS

MODERN HARDWARE FOR CRAFTSMEN — European concealed hinges for wood and glass doors are our specialty. No-bore glass door hinges plus everything else for your

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BRASS FURNITURE HARDWARE — This 36-page catalog shows over 500 items of authentic reproduction hardware from the 1700's and on into this century. This fine quality hardware is a must for the furniture craftsman working on a new project, or the refinisher who needs replacement hardware. HORTON BRASSES. $2.00. *Circle No. 1430.*

WOODWORKER'S SPECIALTIES — 48-page catalog of plans and hard-to-find hardware for the woodworker. Brass hardware, screws, cork products, wood turnings, canister liners, clock movements, picture frame supplies, lamp parts, and more. MEISEL HARDWARE SPECIALTIES. $1.00. *Circle No. 1455.*

TIMBERS COUNTRY STORE — Catalog features hundreds of woodworking supplies, toy patterns, furniture patterns, tool use and instruction books, woodworking pattern books, hardwood toy and furniture parts plus many hard to find tools and shop supplies. TIMBERS COUNTRY STORE. Free. *Circle No. 1470.*

TOYMAKER'S SUPPLY COMPANY — has your best bulk price on quality wooden toy parts and toy plans. Over 50 turnings to make your toys professional looking. Send for catalog. TOYMAKER'S SUPPLY CO. Free. *Circle No. 1475.*

WOOD TOY PATTERNS — Patterns for all ages including childrens' patterns and executive toys. New catalog has many new patterns to choose from including parts and wheels. Send for new catalog and receive a coupon for free wheels and axle pegs. TOYS AND JOYS. $1.00. *Circle No. 1480.*

IF YOU ARE INTERESTED IN RESTORING ANTIQUES — this 112-page catalog packed with unusual, hard-to-find items is just for you. Included are hundreds of essential items for antique restoration including top quality brass reproduction hardware, oil lamps and accessories, numerous wood component repair parts and kits, caning and basketry supplies, everything needed for wood refinishing, related tools, books, and a complete line of upholstery equipment and supplies. All at wholesale prices. Send for this informative catalog. VAN DYKE' SUPPLY CO. $1.00. *Circle No. 1485.*

QUALITY AMERICAN-MADE WOOD TURNINGS — such as shaker pegs, spindles, toy wheels, toy parts, craft items, and dowel rods in birch, oak, walnut, and cherry. Send for complete 32-page catalog. WOODWORKS. $1.00. *Circle No. 1490.*

INCOME OPPORTUNITIES

LETTER LAYOUT GUIDES — Brochure containing complete information about a new product of special interest to scroll sawers, carvers, and wood sign makers. A lettering guide to layout large letters and numbers to be cut in wood or other materials. Made from a durable plastic material for years of use. Price of brochure is refundable with first order. SEYCO SALES CO. $3.00. *Circle No. 1670.*

MISCELLANEOUS

PERSONALIZED BRANDING IRON — Personalize your finished projects with BrandMark's solid brass branding iron. Easy to use, lasts for years, satisfaction guaranteed. Makes an ideal gift. See ad elsewhere in this issue or send for brochure. BRANDMARK. 25¢. *Circle No. 1905.*

CANE AND BASKET SUPPLIES — Every item used in caning and basketry is pictured in this new catalog for hobbyists and others interested in caning, rushing, etc., for either fun or profit. CANE & BASKET SUPPLY CO. $1.00. *Circle No. 1912.*

CLOCK MOVEMENTS CATALOG — The 55-page catalog contains over fifteen different quartz clock movements, including pendulum, strike, and chime movements. Also shown are dials, hands, numerals, and accessories. It features movements made in Japan by the world's largest producer of quartz timepieces. CAS-KER CO. $1.00. *Circle No. 1915.*

LOOKING FOR PIERCED TIN? COME TO THE SOURCE! — A 96+ page catalog plus color brochure introduces you to a treasury of pierced metal panels ready to install in kitchen cabinets, cupboards, piesafes, and other projects. Available in a large variety of sizes, 16 different finishes, over 150 patterns — or all the materials you need to create-it-yourself. Tin, zinc, copper, brass, kits, lanterns, furniture plans, and more! Artistry in pieced tin. COUNTRY ACCENTS. $3.00. *Circle No. 1923.*

INDUSTRIAL QUALITY CUTTING TOOLS — DML offers 1,002 different cutting tools, each engineered for a specific task, all made in America. Four information-filled brochures detail carbide-tipped saw blades, bits, and cutters: concise copy explains applications, photos show tool configurations, and charts list sizes. DML, INC. $1.00. *Circle No. 1935.*

DUBUQUE CLAMP WORKS — The company serious about producing the BEST wood clamps and wood clamp kits. DCW clamps offer strength, durability, and reliability. Two kits available — Metal Hardware only or Metal Hardware Plus Maple Jaws and Handles. Send for literature. DUBUQUE CLAMP WORKS. $1.00. *Circle No. 1949.*

BUY YOUR SANDING BELTS DIRECT FROM THE MANUFACTURER — Industrial Abrasives is the company that gives you six free belts with every dozen ordered. But, sanding belts are not the only product we have to offer. In our catalog you will find many specialty items not readily available in your hardware store. Price of catalog refunded with first order. INDUSTRIAL ABRASIVES CO. $1.00. *Circle No. 1975.*

THE CUSHION CONTOUR SANDER — is a new concept in pneumatic drum sanding. Sanding sleeves are slid over an air bag (inflated with a hand tire pump) on an arbor to mount it between centers on a wood lathe. Drum effectively takes on profiles, curves, and bevels practically eliminating flat spots and chatter marks. INDUSTRIAL ABRASIVES CO. Free. *Circle No. 1976.*

PROFESSIONAL SAFETY PRODUCTS — A complete catalog of personal protective devices and work clothing available at discounted prices. Products include eye and ear protection, gloves, boots, hats, aprons, work clothing, and more. Every product is sold satisfaction guaranteed. KENCO SAFETY PRODUCTS. 25¢. *Circle No. 1989.*

FREE LITERATURE — New brochure showing all *moisture meters* and accessories for moisture meters such as interchangeable electrodes and probes and cables for in-kiln moisture monitoring. Complete line of moisture meters include: Pocket-size Mini-Ligno with LED readout 6%-20%, Mini Ligno E 6%-36%, analog or digital display meters 4%-30%, 60% and a digital moisture meter with built-in compensation for different wood temperatures. LIGNOMAT USA, LTD. Free. *Circle No. 1999.*

PRODUCTION QUALITY CARBIDE TIPPED ROUTER BITS — MLCS Ltd. offers a full line of professional production quality carbide tipped router bits at 50-70% lower than retail prices. We sell through the mail and only direct to craftsmen. Send today for information. MLCS LTD. Free. *Circle No. 2005.*

PERFECT EDGE-JOINING EVERYTIME — "Duo-Clamp" holds your boards flat while applying uniform yet firm pressure to squeeze out excess glue. Bowing totally impossible. The need for a surface planer is eliminated; a light belt sander finishes your job. Patent applied for. Easily assembled and unconditionally guaranteed. Made of sturdy maple. Send for information. MARK PRODUCTS. 25¢. *Circle No. 2009.*

WOOD CARVING — You can obtain information on learning woodcarving by sending for our literature. The offer includes sample copy of *The Mallet Magazine* and two lesson sheets on carving. NATIONAL CARVERS MUSEUM. $1.00. *Circle No. 2021.*

BANDSAW OWNERS — A new tool is now available so you can make or repair any length bandsaw blade in minutes. Our splicer enables craftsmen to make up any length blade from economical coil blade stock quickly and easily. Three models are currently available to accomodate blade widths from ⅛ to 1½ in. The tool comes complete with detailed instructions and supplies. We also carry OLSON bandsaw stock at reasonable prices. Send for literature. NEW MILFORD SPECIALTIES CO. 50¢. *Circle No. 2025.*

OUR FOUR COLOR CATALOG — features a large selection of movements, hands, dials, bezels, numerals, weather instruments, prints as well as a full-line of clock making supplies. Thousands of ultra-thin pendulum and chime movements in stock at all times. Most orders shipped within 48 hours. PRECISION MOVEMENTS. $1.00. *Circle No. 2045.*

WOODWORKING ASSOCIATION OF NORTH AMERICA — First international association for woodworkers. Benefits include our quarterly magazine *International Woodworking*, specials from selected manufacturers, group health and life insurance, access to the woodworking network. WOODWORKING ASSOC. OF NORTH AMERICA. 50¢. *Circle No. 2092.*

DOOR SHOP™ MANUAL AND CATALOG — The 37-page Door Shop™ manual is clearly written and beautifully illustrated with over 156 detailed drawings covering the complete process of door building. Each section covers proper methods and exact set-ups for the router, including how to recognize and correct for errors. There are sections covering design, lumber selection, measuring, panel raising, rail and stile fitting, guides, clamping, gluing, and finishing. This is the most comprehensive manual out today. When you purchase the Door Shop™ manual for $5.00 you also recieve Zac's 26-page router bit and shaper cutter catalog free. And as an extra bonus you receive a hardwood door corner sample with your catalog order. $5.00 rebated with purchase. ZAC PRODUCTS INC. $5.00. *Circle No. 2098.*

CARVING SUPPLIES

WOODCARVING TOOLS — Whittlers and carvers — Warren Tool Co. offers a catalog for you full of whittling and carving hand/power tools, books, stones, wood, and supplies. Since 1927, the finest in woodcarvers tools. WARREN TOOL CO., INC. 60¢. *Circle No. 2185.*

Information

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Print this article

The Bulletin Board

FACTS, FACES & FABLES OF INTEREST TO HOME WOODWORKERS

"IN PURSUIT OF BEAUTY"

This finely crafted, highly detailed rosewood library table was designed by the Herter Brothers in 1882 for William Vanderbilt. From now until January 11, you can see it and other fine pieces from the 1870s and 1880s at an exhibition titled "In Pursuit of Beauty: Americans and the Aesthetic Movement," in the American Wing of New York's Metropolitan Museum of Art.

Sponsored by Meredith Corporation, publisher of *Better Homes and Gardens® WOOD* magazine, and the National Endowment for the Humanities, the exhibition examines the post-Civil War trends that brought art into everyday life.

WHERE YOU'LL FIND THE WOOD

Of the nearly 1,200 species of forest trees found in this country, the southeastern states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia have the most variety. You'll find at least half of all species growing there.

When it comes to hardwoods, however, the northern states (above the old Mason-Dixon line) grow more than half. The South accounts for 41 percent, and the West — the Pacific Coast in particular — has the rest.

ON THE LEVEL: THE STORY OF THE STANLEYS

Finding a person with the last name of Stanley in New Britain, Connecticut, before the Civil War was as easy as finding acorns under oak trees. And, if there had been telephones and directories back then, all the Stanleys would have been listed in the Yellow Pages under "tools" or "hardware."

Frederick T. Stanley and his brother William founded The Stanley Bolt Manufactory there in 1843 to make bolts, hasps, handles, and other hardware items. Two cousins, Augustus and Gad Stanley, established A. Stanley and Company in 1850 and began manufacturing rules.

Seven years later, in 1857, Henry Stanley, yet another cousin, merged with Augustus and Gad and a local New Britain level-and-plumb manufacturing business to form the Stanley Rule and Level Company. Meanwhile, Frederick and William's enterprise had grown to become The Stanley Works, and added hinges.

Through the late 1800s and the turn of the century, both companies evolved into leading manufacturers in their respective fields — The Stanley Works in hardware and the Stanley Rule and Level Company in hand tools. The companies even sold their products internationally.

In 1920, all the Stanleys decided to get together — business-wise. The two companies merged, with Stanley Rule and Level becoming the present Stanley Tools Division of The Stanley Works. United, the companies paved the road for growth.

Today, 143 years after the first Stanley business was born, no direct descendents of the Stanley family plot the company's course. But the name has earned a worldwide recognition with consumer, builder, and industrial products.

AROUND THE NATION

16th Annual Midwestern Wood Carvers Show, Nov. 1-2
Belle-Clair Exposition Hall, Belleville, Ill. Over 140 wood-carvers. Sales of tools and supplies. Sponsored by the Belleville Wood Carvers Club. Contact Don Lougeay at 618/233-5970 for more information.

Last Chance Woodworker's Show, Nov. 8-9.
Palmer Auditorium, Austin, Texas. 1st annual show and sale of original, handcrafted pieces. Exhibitors expected to total 200. Sponsored by the Austin Woodworkers Guild. For details, call French Smith, 512/472-4864.

20th Annual Foothills Craft Guild Fall Show, Nov. 14-16.
The Civic Center, Oak Ridge, Tenn. Show of traditional and contemporary crafts, demonstrations, and music played on handmade instruments. Celebrates state's craft heritage. Sponsored by Foothills Craft Guild, Inc. Call Dorothy Senn, 615/483-0587.

Woodworking World Show Nov. 21-23.
Charlotte Civic Center, Charlotte, N.C. Exhibits, sales, and demonstrations of machinery, tools, and supplies. Seminars for woodworkers. For more information, call 603/536-3768.

Northern California Woodworking Show, Nov. 21-23.
San Jose Convention and Cultural Center, San Jose, Calif. Features machinery, power and hand tools, supplies, demonstrations, and free workshops. For details, call 213/477-8521.

Artistry in Wood, Nov. 29-30.
Marymount College, Arlington, Va. 11th annual wood-carving show, includes exhibits of work, sales, and demonstrations. Sponsored by Northern Virginia Carvers. Contact Charles Schafer, 703/256-2779.

Working With Wood Show, Dec. 5-7
Disney Land Hotel, Anaheim, Calif. Tool and technique demonstrations, hands-on product testing, and sale of woodworking supplies and equipment. Area craftsmen exhibiting. For complete information, call 408/973-0447.

SCHOOL BOARDS

In colonial times, school blackboards were actually made of wide pine boards painted a dull black. The name stuck even when blackboards were made of slate, and remains with us today, no matter what materials are used.

A CLASSIC FIGURE WILL IMPROVE THE LOOKS OF YOUR COLLECTION.

Wood Carving: Highlander Figure
Folk Art USA 22
Wood Carving: Ship Figurehead
Folk Art USA 22
Wood Carving: Nautical Figure
Folk Art USA 22
Wood Carving: Cigar-Store Figure
Folk Art USA 22

Your stamp collection will look four times better when you carve out a place in it for these beautifully crafted figures of American folk art.

There's the graceful ship figurehead that a century ago adorned the bow of sailing vessels.

And the colorful cigar store figure that once stood in storefronts across America.

A handsomely crafted mariner with sextant and a highlander round out this issue.

Get your hands on these stamps and become a crafty collector.

Whether you're a serious collector or just a beginner, when you look into stamps, you discover yourself. **U.S. Postal Service**

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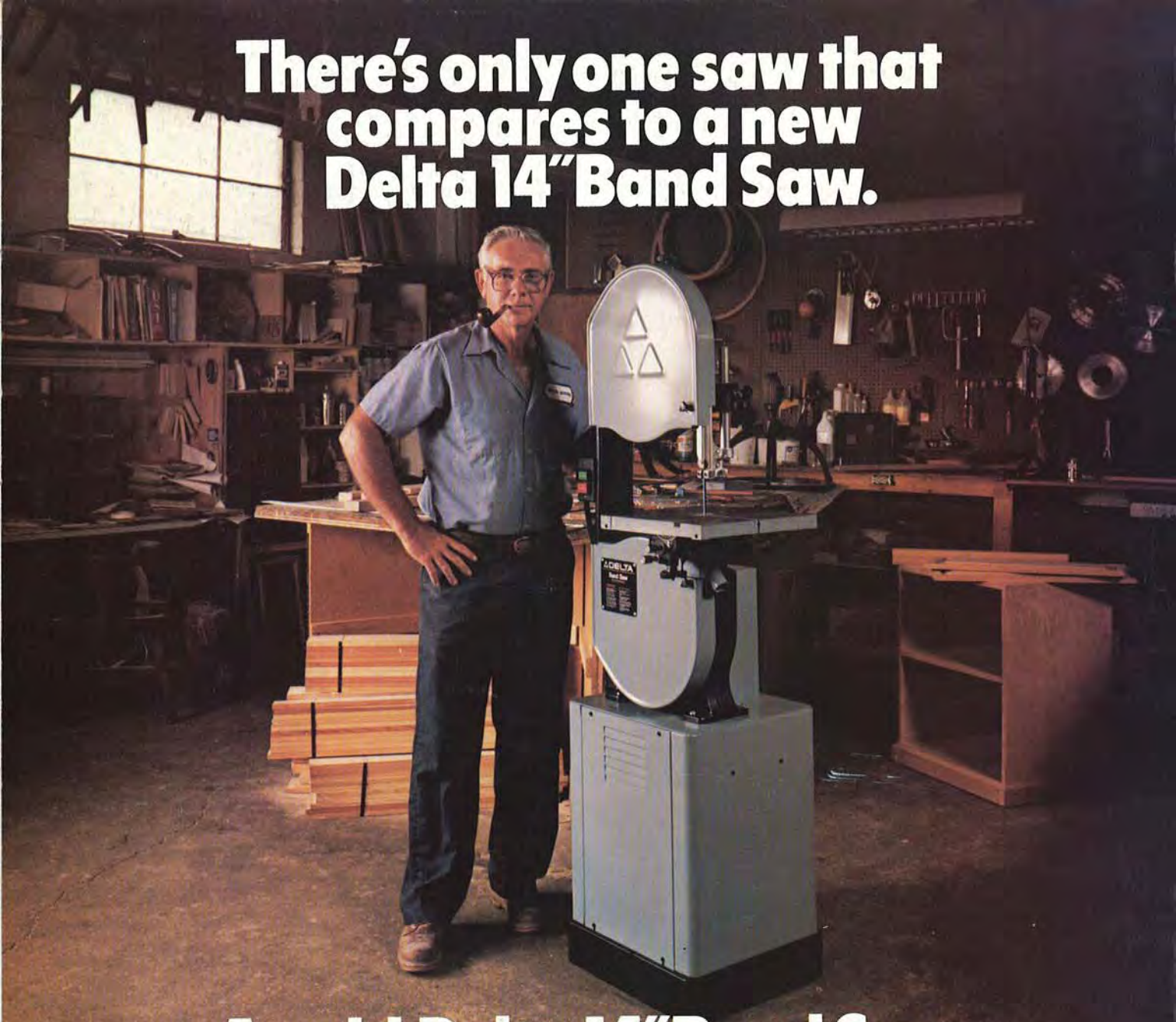
There's only one saw that compares to a new Delta 14" Band Saw.



An old Delta 14" Band Saw.

If you want to own a band saw with Delta quality, you have two choices.

You can buy a new Delta band saw from a dealer.

Or you can buy an old Delta band saw from an old-timer.

But you may have a heckuva time convincing him to part with it.

Because Delta owners are kind of attached to their machines. They're spoiled by a band saw that doesn't vibrate. (And makes so little noise, they can practically hear the sawdust hit the floor.)

They're loyal to the micrometer adjustment blade guide system. To those precision balanced aluminum wheels with replaceable tires.

That's why we haven't changed it much over the years.

Recently, we did restyle it. With a sleeker finish and streamlined trim. But we still make it in America. And we still make it like we used to.

So when you buy a *new* Delta Wood or Metal Cutting 14" Band Saw, you're buying the same kind of quality you find in our old band saws.

And you won't have to twist our arm to sell you one.

The Delta 14" Band Saw. We keep building on our tradition. So you can, too. Call toll-free for the name of your Delta distributor: Delta International Machinery Corp., 800/438-2486 (in PA, 800/438-2487).

DELTA

Building On Tradition